Vol. 1020 Number 1

OFFICIAL GAZETTE

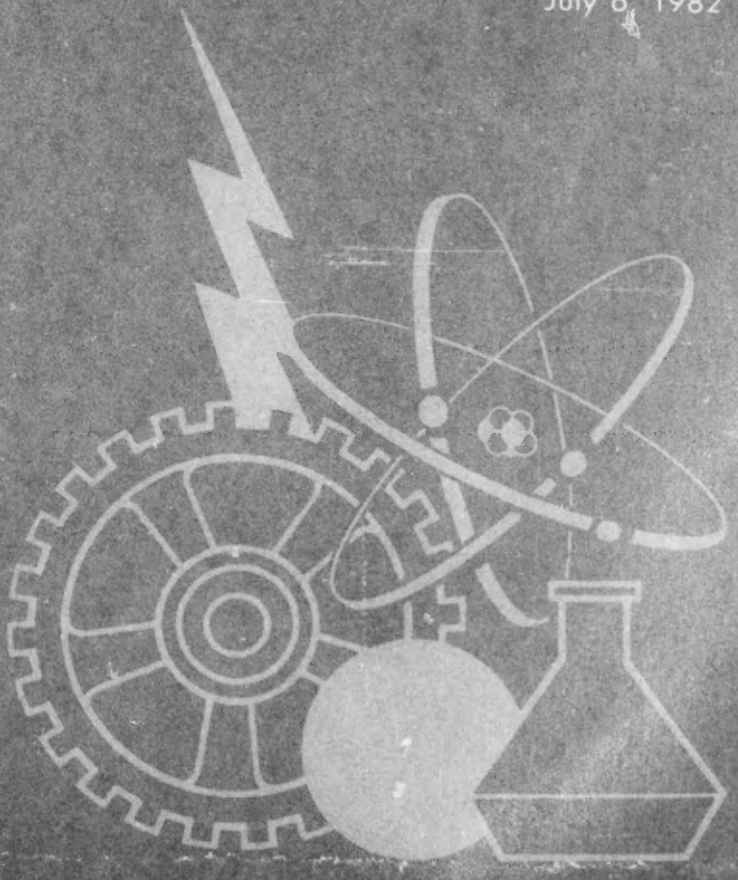
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

July 6, 1982



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U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 6, 1982 Volume 1020 Number 1

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly, subscription $360.00 per annum for first-class mailing, also available as fourth-class mail at $250.00 domestic; $312.50 foreign; foreign first-class mailing rates will be furnished upon request; single copies each, $6.50 domestic, $8.15 foreign.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,312,242, Re. S.N. 369,556, Filed Apr. 19, 1982, Cl. 137/601, DAMPER CONSTRUCTION, Elliot Kahn, et al., Owner of Record: *Arrow United Industries, Inc., Bronx, N.Y.,* Attorney or Agent: Martin E. Goldstein, Ex. Gp.: 341

4,092,229, Re. S.N. 373,143, Filed Apr. 29, 1982, Cl. 204/180R, THERMAL CONVECTION COUNTER STREAMING SEDIMENTATION AND FORCED CONVECTION GALVANIZATION METHOD FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING, Bhairad C. Bhattacharya, Owner of Record: *National Patent Development Corp., New York. N.Y.,* Attorney or Agent: Jesse B. Grove, Jr., et al., Ex. Gp.: 116

4,186,117, Re. S.N. 343,040, Filed Jan. 27, 1982, Cl. 260/23AR, CATHODIC ELETRODEPOSITION COATING COMPOSITIONS CONTAINING DIELS-ALDER ADDUCTS, Ivan H. Tsou, Owner of Record: *Wyandotte Paint Products Co., Birmingham, Mich.,* Attorney or Agent: Ralph M. Burton, et al., Ex. Gp.: 144

4,250,412, Re. S.N. 376,794, Filed May 10, 1982, Cl. 307/279, DYNAMIC OUTPUT BUFFER, Roger I. Kung, et al., Owner of Record: *Motorola, Inc., Schaumburg, Ill.,* Attorney or Agent: Anthony J. Sarli, Jr., et al., Ex. Gp.: 254

4,250,412, Re. S.N. 376,795, Filed May 10, 1982, Cl. 307/279, DYNAMIC OUTPUT BUFFER, Roger I. Kung, et al., Owner of Record: *Motorola, Inc., Schaumburg, Ill.,* Attorney or Agent: Anthony J. Sarli, Jr., et al., Ex. Gp.: 254

4,282,287, Re. S.N. 374,105, Filed May 3, 1982, Cl. 428/407, BIOCHEMICAL AVIDIN-BIOTIN MULTIPLE-LAYER SYSTEM, Roger W. Giese, Owner of Record: *Inventor,* Attorney or Agent: Richard P. Crowley, Ex. Gp.: 164

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,558,040, Reexam. No. 90/000,210, Requested: June 1, 1982, Cl. 229/73, TWO-WAY ENVELOPE, Lloyd H. Krueger, Owner of Record: *Ira B. Kristel, Deer Park, N.Y.,* Attorney or Agent: Roger, Bereskin & Parr, Ex. Gp.: 241, Requester: Boise Cascade Corp., c/o Lawrence E. Laubscher, Sr., Arlington, Va.

3,811,830, Reexam. No. 90/000,212, Requested: June 2, 1982, Cl. 8/405, STABLE OIL-IN-WATER EMULSION HAIR DYE COMPOSITION, Richard DeMarco, Owner of Record: *Clairol, Inc., New York, N.Y.,* Attorney or Agent: Irving Holtzman, et al., Ex. Gp.: 125, Requester: Clairol, Inc., c/o Gabriel P. Katona, Bristol-Myers Co., New York, N.Y.

4,288,775, Reexam. No. 90/000,208, Requested: June 1, 1982, Cl. 338/35, DEVICE AND METHOD OF MANUFACTURING A RELATIVE HUMIDITY SENSOR AND TEMPERATURE SENSOR, Paul F. Bennewitz, et al., Owner of Record: *Inventor,* Attorney or Agent: William W. Cochran, II, Ex. Gp.: 213, Requester: John A. Lehive, Jr., Kenway & Jenney, Boston, Mass.

Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

3,208,318, Peter M. Roberts, QUICK RELEASE FOR SOCKET WRENCHES, **filed** Nov. 7, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 5986, *Peter M. Roberts* v. *Sears, Roebuck & Co.* Judgment entered in favor of plaintiff and against defendant. Filed Apr. 5, 1982.

3,239,514, Sandoz Ltd., PHENOTHIAZINE DERIVATIVES SUBSTITUTED BY A MONOVALENT SULFUR FUNCTION IN 3-POSITION, **filed** Oct. 31, 1980, D.C. District of Columbia (Wash. D.C.), Doc. 80-2809, *Federal Pharmacal, Inc., et al* v. *Sandoz Ltd., et al.* Patent No. 3,239,514 is valid and enforceable. Plaintiffs are restrained and enjoined from further infringing Defendant's patent. Filed Dec. 22, 1980.

3,257,835, Southwire Co., METHOD OF FORMING HOT METAL; **3,315,349, same,** METHOD OF PRODUCING HOT-FORMED COPPER-BASE PRODUCTS; **3,317,994, same,** METHOD OF CONDITIONING METAL FOR HOT FORMING, **filed** Nov. 24, 1980, D.C., S.D.N.Y., Doc. 80-Civ-6674, *Southwire Co.* v. *Krupp International.* Stipulation and Order of Dismissal with prejudice filed Oct. 14, 1981.

3,306,465, Francis P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS; **3,519,139, same,** WARDROBE HANGER BAR; **3,613,898, same,** CAP LOCKING MEANS FOR WARDROBE HANGER BAR, **filed** July 25, 1977, D.C., S.D.N.Y., Doc. 77-Civ-3567, *Francis P. Brennan, et al* v. *Mr. Hanger, Inc., et al.* Judgment filed Jan. 18, 1980.

3,306,465, Francis P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS, **filed** Mar. 30, 1982, D.C.N.J. (Camden), Doc. 82-0983, *Francis P. Brennan, et al* v. *Garment Bar, Inc., et al.*

3,311,047, Lester L. Smith, ROOF VENTILATORS, **filed** Oct. 21, 1975, D.C., W.D. Mich. (Grand Rapids), Doc. 75 504 Cal, *H. C. Products Co.* v. *Leigh Products, Inc.* Defendant is entitled to judgment on the claim of infringement and plaintiff is entitled to judgment on the counterclaim of invalidity. Filed Feb. 1, 1982.

3,315,349. **(See 3,257,835.)**

3,317,994. **(See 3,257,835.)**

3,326,009, Archie R. Gagne, PLOW FOR LAYING CABLE, FLEXIBLE CONDUIT OR THE LIKE; **3,326,010, same,** SLIT TRENCHING AND CABLE LAYING MACHINE, **filed** Mar. 25, 1982, D.C. Minn. (St. Paul), Doc. 3-82-340, *Vibra-King, Inc., et al* v. *Archie R. Gagne.*

3,326,010. **(See 3,326,009.)**

3,330,405, Ronald H. Taub, COLLAPSIBLE DISPLAY BIN, **filed** Apr. 22, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2510, *Taub Family Trust U/A Dated Sept. 1, 1967, et al* v. *Brown Williamson Tobacco Corp.*

3,368,501, Harvey G. Kuhlman, FOOD DISTRIBUTING APPARATUS, **filed** Feb. 18, 1982, D.C., W.D. Wis. (Madison), Doc. 82-C-117, *Harvey G. Kuhlman* v. *Specialties, Inc.*

3,380,447, Robert M. Martin, ANKLE DEVICE FOR SUPPORTING AN INDIVIDUAL IN AN INVERTED POSITION, **filed** Apr. 9, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71298, *Robert M. Martin* v. *Paul Wittmer.*

3,390,906, Hi-Shear Corp., JOINT WITH INHERENTLY LIMITED TORQUE LEVEL, **filed** Feb. 10, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-0624, *Air Industries Corp.* v. *Hi-Shear Corp.*

3,397,928, Hughes Tool Co., SEAL MEANS FOR DRILL BIT BEARINGS, **filed** Mar. 26, 1982, D.C., N.D. Tex. (Fort Worth), Doc. CA4-82-152, *Hughes Tool Co.* v. *Rock Bit Industries U.S.A., Inc.*

3,404,658, Sommer and Maca Glass Machinery Co., CURTAIN COATING APPARATUS, **filed** Aug. 31, 1979, D.C.N.J. (Newark), Doc. 79-2656, *Sommer and Maca Industries, Inc.* v. *Century Engineering Co., Inc.* Order dismissing action, without costs, filed Apr. 20, 1982.

3,407,778, Washington Chain & Supply, Inc., MARINE TOWING PLATE, **filed** Feb. 12, 1982, D.C., W.D. Wash. (Seattle), Doc. 82-162V, *Washington Chain & Supply, Inc.* v. *Panama Machinery & Equipment, Inc., et al.*

3,415,374, Nils Anders Lennart Wikdahl, METHOD AND APPARATUS FOR VORTICAL SEPARATION OF SOLIDS, **filed** Apr. 1, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-670A, *Nils Anders Lennart Wikdahl* v. *Celleco, Inc., et al.*

3,432,985, Donald B. Halstead, STRIP PACKAGING MACHINE FOR NAILS AND OTHER SIMILAR ARTICLES, **filed** Sept. 24, 1973, D.C., E.D. Calif. (Fresno), Doc. F-866-CIV, *Rite-Nail Packaging Corp. & Donald B. Halstead* v. *Berryfast, Inc., et al.* Judgment in favor of Defendants and against Plaintiffs filed Mar. 30, 1982.

3,480,984, Joseph V. Kidd, PIG APPARATUS, **filed** Mar. 24, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-841, *Doris L. (Kidd) Davis, et al* v. *Sea Level, Inc., et al.*

3,488,017, Staar S.A., STOP SYSTEM FOR A TAPE REEL DRIVE, **filed** Oct. 29, 1981, D.C., N.D. Ill. (Chicago), Doc. 81C6081, *Staar S.A.* v. *Ford Motor Co.* Order that Plaintiff's complaint be dismissed with prejudice filed Mar. 24, 1982.

3,506,070, Marathon Oil Co., USE OF WATER-EXTERNAL MICELLAR DISPERSIONS IN OIL RECOVERY; **3,506,071, same, filed** Feb. 26, 1982, D.C., C.D. Ill. (Peoria), Doc. 2-1043, *Marathon Oil Co.* v. *Tri Star Producing Co., Inc., et al.*

3,506,071. **(See 3,506,070.)**

3,519,139. **(See 3,306,465.)**

3,574,911, Milling Specialties, Inc., CUTTER AND INSERTS THEREFOR, **filed** June 10, 1981, D.C., W.D. Pa. (Erie), Doc. 81-130 ERIE, *Milling Specialties, Inc.* v. *Greenleaf Corp.* Stipulation of dismissal without prejudice filed Feb. 24, 1982.

3,613,898. **(See 3,306,465.)**

3,644,457, Mobay Chemical Corp., PREPARATION OF STABLE LIQUID DIPHENYLMETHANE DIISOCYANATES, **filed** Mar. 23, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-833, *Mobay Chemical Corp.* v. *Upjohn Co.*

3,719,389, Burton and Kiger, THERMO PLASTIC TUBING FURNITURE, **filed** Apr. 15, 1982, D.C., M.D.N.C. (Greensboro), Doc. C-82-412-G, *Terra Furniture, Inc.* v. *Hugonet, Calfeutrex and Claude Barril.*

3,751,618, Hi-Tek Corp., PUSH SWITCH WITH SPRING BIASED PLUNGER, **filed** Mar. 17, 1980, D.C. Del. (Wilmington), Doc. 80-126, *Hi-Tek Corp.* v. *Stackpole Components Co.* Stipulation and Order of Dismissal with prejudice filed Apr. 21, 1982.

3,756,139, John Wolens, POPCORN POPPER, **filed** Oct. 16, 1979, D.C., N.D. Ill. (Chicago), Doc. 79C4291, *John Wolens* v. *F. W. Woolworth, et al.* Judgment entered in favor of defendants on plaintiff's complaint. Judgment on defendants' counterclaim entered as follows: Judgment for defendants on claim of noninfringement of patent in suit and judgment for plaintiff on claim of invalidity of patent in suit. Filed Apr. 14, 1982.

3,851,972, Coulter Electronics, Inc., AUTOMATIC METHOD AND SYSTEM FOR ANALYSIS AND REVIEW OF A PLURALITY OF STORED SLIDES, **filed** Apr. 21, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2462, *Coulter Electronics, Inc.* v. *Smithkline Clinical Laboratories, Inc.*

3,943,974, ACF Industries, Inc., CONTROL VALVE FOR FLUID ACTUATOR, **filed** Mar. 22, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-821, *ACF Industries, Inc.* v. *C.S.E. Automation Engineering & Services, Inc.*, doing business as Automation USA.

3,962,575, Ben W. Vandenberg, RADIAL ARM MILK HOSE SUPPORT, **filed** Mar. 12, 1982, D.C., W.D. Wis. (Madison), Doc. 82-C-194, *Ben W. Vandenberg, et al* v. *Dairy Equipment Co.*

4,002,243, Stanspec Co., JIB CRANE, **filed** June 8, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 3176, *Stanspec Co.* v. *Abell-Howe Co.* Stipulated Order without prejudice dated Sept. 1, 1981.

4,022,065, Ramin and Stearns, CALIBRATED SAMPLE DELIVERY APPARATUS ACCOMODATING OFFSET ERROR, **filed** Apr. 12, 1982, D.C., S.D. Tex. (Houston), Doc. H-79-1932, *Stanley D. Stearns, et al* v. *Beckman Instruments, Inc.* (This is a reopening of case originally filed Sept. 20, 1979.)

4,042,367, Aquashade, Inc., METHOD FOR CONTROLLING THE GROWTH OF AQUATIC PLANTS, **filed** Apr. 22, 1982, D.C., W.D. Mich. (Grand Rapids), Doc. G82-207CA5, *Aquashade, Inc.* v. *Aquatics Unlimited, Inc., et al.*

4,124,201, Robert E. Burton, KNOCKDOWN SPRING UNIT, **filed** Mar. 31, 1981, D.C., N.D.N.Y. (Utica), Doc. 81-Civ-292, *Futorian Corp.* v. *Robert E. Burton.* Notice of voluntary dismissal filed Mar. 2, 1982.

4,128,357, Barth and von Langsdorff, SLAB-ELEMENTS FOR COVERING THE GROUND, **filed** Mar. 22, 1982, D.C., S.D. Fla. (W. Palm Beach), Doc. 82-8120-CIV-JE, *F. Von Langsdorff Licensing Ltd., et al* v. *Paverlock, Inc., et al.*

4,135,744, Robert E. Fouts, TERMINAL FITTING FOR A TUBULAR CONDUIT; **D. 251,676, same, filed,** Jan. 25, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-0336, *Earl's Supply Co.* v. *Russell Performance Productions, Inc., et al.*

4,136,125, Hooker Chemicals & Plastics Corp., PREPARATION OF BIS (PENTACHLOROCYCLOPENTADIENYL), **filed** Feb. 8, 1982, D.C., W.D.N.Y. (Buffalo), Doc. 82-110C, *Zoecon Corp. and Hooker Chemicals & Plastics Corp.* v. *Sathon, Inc., et al.* Voluntary dismissal of action without prejudice filed Apr. 19, 1982.

4,176,921, Carrera International Corp., EYEGLASSES HAVING REMOVABLE LENSES; **Reg. No. 855,063** (CARRERA), Carrera International Corp., **filed** Dec. 15, 1981, D.C., S.D. Fla. (Miami), Doc. 81-2801-CIV-SMA, *Carrera International Corp.* v. *Eye to Eye Optical, Inc., et al.*

4,176,921, Carrera International Corp., EYEGLASSES HAVING REMOVABLE LENSES, **filed** Apr. 12, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2320 GLG, *Carrera International Corp.* v. *Riviera Trading Corp.*

4,196,699, David Christopher Leeming, POULTRY DRINKER; **D. 218,831, same,** DRINKING TROUGH FOR POULTRY; **D. 219,778, same,** VALVE ASSEMBLY FOR POULTRY DRINKING DEVICE, **filed** Apr. 5, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-0930, *Monoflo International, Inc.* v. *Broiler Equipment Co., Ltd.*

4,201,388, Ruth Faye Cantelon, GAME APPARATUS, **filed** Apr. 21, 1982, D.C., W.D. Wash. (Seattle), Doc. 82-467M, *Ruth Faye Cantelon* v. *Standex International Corp.*, doing business as Standard Publishing Co., et al.

4,227,340, Goldfarb and Dantzer, PLAY SET, **filed** Apr. 17, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2371, *Knickerbocker Toy Co., Inc. and Adolph E. Goldfarb* v. *Nasta Industries, Inc.* Patent No. 4,227,340 is owned by plaintiff and is good and valid in law. Consent judgment filed Apr. 15, 1982.

4,236,498, James R. Taliaferro, SEE THROUGH FIREPLACE, **filed** Mar. 18, 1982, D.C., E.D. Mo. (St. Louis), Doc. 82-404C(3), *Best Metal Products, Inc.* v. *Pryosolar Industries, Inc.*

4,241,880, Nordson Corp., ELECTROSTATIC SPRAY GUN, **filed** Apr. 1, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71186, *Nordson Corp.* v. *Graco, Inc.*

4,266,578, Swain, Thomerson and Waldrop, DRILL PIPE PROTECTOR, **filed** Mar. 26, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-868, *Regal International, Inc.* v. *Supreme Rubber Products Co., Inc.*

4,273,525, Incoe Corp., INJECTION MOLD BUSHING, **filed** Mar. 26, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71097, *Incoe Corp.* v. *D-M-E Co.*

4,280,478, Duval, Bagshaw, Kast, Masters and Whitehouse, FREEZE PROTECTION APPARATUS FOR SOLAR COLLECTORS, **filed** Apr. 21, 1982, D.C. Nev. (Reno), Doc. CV-R-82-156-BRT, *Sunspool Corp.* v. *Richdel, Inc.*

4,293,603, Hayman-Chaffey and Hayman-Chaffey, ACRYLIC SHEET-LACQUER LAMINATES AND ARTICLES OF FURNITURE MADE THEREFROM, **filed** Mar. 19, 1982, D.C., S.D.N.Y., Doc.82-Civ-1719 CES, *Hayman-Chaffey Designs, Inc.* v. *Directional Industries, Inc., et al.*

Re. 28,474, Nalco Chemical Co., PROCESS FOR RAPIDLY DISSOLVING WATER-SOLUBLE POLYMERS; **Re. 28,576, same,** PROCESS FOR RAPID DISSOLVING WATER-SOLUBLE VINYL ADDITION USING WATER-IN-OIL EMULSIONS, **filed** Mar. 18, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-136-ORL-CIV-R, *Nalco Chemical Co.* v. *Callaway Chemical Co.*

Re. 28,576. **(See Re. 28,474.)**

D. 218,831. **(See 4,196,699.)**

D. 219,778. **(See 4,196,699.)**

D. 243,330, Optyl Corp., EYEGLASS FRAME, **filed** Jan. 13, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-0332, *Optyl Corp.* v. *Prestige Optics, Inc.* Plaintiff is the owner of D. 243,330. Defendant is permanently enjoined against further infringement of D. 243,330. Filed Mar. 17, 1982.

D. 251,676. **(See 4,135,744.)**

D. 258,174, Shane and Shane, THIMBLE, **filed** Feb. 25, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 1186, *Frank Horvath, doing business as Quality Aristic Glass* v. *Koeningswasser Glass Works, Ltd.*

D. 261,132, Vetter Corp., MOTORCYCLE FAIRING, **filed** Mar. 25, 1982, D.C., C.D. Ill. (Danville), Doc. 82-2083, *Vetter Corp.* v. *Hoese Corp., doing business as The Invader & Cycle Sound.*

PATENT NOTICES

Certificates of Correction for the Week of July 6, 1982

Re. 30,717	4,303,002	4,314,909	4,323,545
Re. 30,815	4,304,378	4,314,979	4,323,552
4,043,982	4,305,127	4,315,466	4,323,568
4,065,589	4,305,615	4,315,496	4,323,848
4,120,919	4,306,048	4,315,660	4,324,268
4,121,365	4,307,790	4,315,855	4,324,400
4,177,086	4,307,873	4,316,084	4,324,576
4,230,403	4,307,875	4,316,204	4,324,906
4,233,310	4,308,308	4,316,494	4,324,970
4,234,322	4,308,522	4,317,200	4,324,972
4,243,357	4,309,091	4,317,935	4,325,518
4,244,175	4,310,273	4,318,375	4,325,554
4,269,457	4,310,373	4,318,502	4,325,822
4,271,664	4,310,657	4,318,651	4,325,833
4,273,870	4,310,700	4,318,719	4,325,972
4,275,962	4,310,764	4,318,900	4,326,059
4,283,614	4,311,373	4,318,949	4,326,077
4,289,078	4,311,917	4,319,027	4,326,177
4,293,053	4,312,022	4,319,188	4,326,266
4,294,617	4,312,271	4,319,273	4,326,306
4,297,494	4,312,635	4,319,585	4,326,425
4,298,316	4,312,878	4,319,633	4,326,675
4,299,024	4,313,064	4,319,698	4,326,748
4,299,242	4,313,119	4,320,224	4,326,751
4,299,269	4,313,797	4,321,004	4,326,937
4,299,781	4,313,805	4,321,333	4,326,952
4,300,014	4,313,886	4,321,809	4,327,025
4,300,234	4,313,972	4,322,103	4,327,120
4,300,746	4,314,154	4,322,534	4,327,176
4,301,328	4,314,393	4,322,753	4,328,712
4,301,914	4,314,541	4,323,240	
4,302,453	4,314,665	4,323,529	
4,302,626	4,314,791	4,323,530	

Disclaimers

4,074,004.—*George F. Bateson,* Roseville; *Francis W. Brown,* West St. Paul and *Steven M. Heilmann,* St. Paul, Minn. PRESSURE-SENSITIVE ADHESIVE TAPE EMPLOYING MOISTURE RESISTANT ACRYLATE-BASE COPOLYMER ADHESIVE. Patent dated Feb. 14, 1978. Disclaimer filed May 12, 1982, by the assignee, *Minnesota Mining & Mfg. Co.*

Hereby enters this disclaimer to claims 1-15 of said patent.

4,178,987.—*Walker H. Bowman,* St. Charles and *Bruce E. Sirovich,* Naperville, Ill. MOVING BED HYDRIDE/DEHYDRIDE SYSTEMS. Patent dated Dec. 18, 1979. Disclaimer filed Apr. 22, 1982, by the assignee, *Standard Oil Co.*

Hereby enters this disclaimer to claims 1-15 and 40 of said patent.

Disclaimer and Dedication

3,960,313.—*Alan M. Sax,* Chicago, and *Walter J. Stolkin,* Schaumburg, Ill. AUTOMATIC SETUP CARTON CONSTRUCTIONS. Patent dated June 1, 1976. Disclaimer and Dedication filed May 14, 1982, by the assignee, *Stone Container Corp.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

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North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 15, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-09-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-08-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-15-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-04-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-11-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-02-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-07-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-26-80

Expiration of patents: The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,181,175 to 3,186,003, inclusive

Plant Patents ..... Numbers 2,502 to 2,521 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 6, 1982

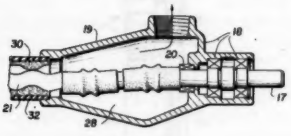
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,001
DEVICE FOR EXTRACTION OF CATARACTS USING MINIATURIZED PROGRESSING CAVITY PUMP

Elmer J. Ballintine, 9203 Cedarcrest St., Bethesda, Md. 20014

Filed Jun. 4, 1981, Ser. No. 270,657
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—276
1 Sheets Drawing. 11 Pages Specification



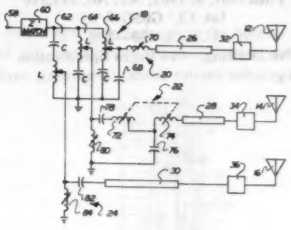
A surgical tissue macerating and removal instrument or tool having a rotating, longitudinally progressing rotor member in a miniaturized Moyno pump cavity, disposed within a hypodermic tube, which itself is coaxially disposed in an extension of a tool handle. A frusto-conical member extends into the tool handle extension and is provided with a cut-off tissue engaging edge at the end distant from the tube. The pump rotor is provided at the end distant from the tube with a cutting edge or other means suitable for drilling into the cataractous lens of an eye. Apertures are provided in the extension adjacent the frusto-conical member so that a treatment fluid may be supplied in the annular space between the tube and the extension and thus may flow to the aperture site. An aperture is provided in the frusto-conical member between the extension and the tube so that the treatment fluid may also enter into the tube where it mixes with macerated tissue being directed through an aperture in the tube to a passageway which may have suction applied thereto to help remove macerated material from the operative site. Radially-inwardly extending fins may be provided on the interior surface of the frusto-conical member to inhibit or prevent rotation of the cataractous lens tissue being macerated.

T102,002
PHASE INVARIANT, ADJUSTABLE POWER CONTROLLER

Johnny D. Jubera, 3 Curved Creek Rd., Quincy, Ill. 62301

Continuation of Ser. No. 63,724, Aug. 6, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,346
Int. Cl.³ H01Q *3/26*
U.S. Cl. 343—854
3 Sheets Drawing. 25 Pages Specification

A power controller is disclosed which is adapted to be coupled between a power source and a power sink. The controller is linear, passive, and lossless, and is characterized by an input impedance of zero when the output is open-circuited, and by an adjustable voltage-input/current-output ratio. One disclosed embodiment is comprised of a series resonant LC Circuit wherein the inductor has an adjustable tap location. The power sink is connected across the tap. Various circuits are also disclosed which are connectable to the output of the power controller for adjusting the phase of the output signal. A power divider system for distributing power from a transmitter

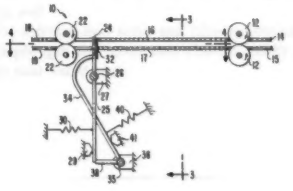


to plural broadcasting antennas is shown which utilizes these power controllers and phase adjusters.

T102,003
METHOD AND APPARATUS FOR ALIGNING PLIABLE MATERIAL

Michael K. Bullock, 1487 Kennedy Ct., Boulder, Colo. 80303

Continuation of Ser. No. 42,741, May 29, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 248,130
Int. Cl.³ B65H *7/02*
U.S. Cl. 271—227
2 Sheets Drawing. 20 Pages Specification



The method and apparatus aligns the leading edge of pliable sheet material such as paper, transverse to its intended direction of travel. Feed means positively advances the material between guide members towards an alignment member pivotally mounted but releasably secured by a latch means in the plane of the desired leading edge orientation for the sheet material. Position sensing means adjacent the alignment member senses proper leading edge orientation. The latch means responds to the position sensing means operation to release the alignment member and sheet material for movement towards transport means adapted to positively engage the sheet material leading edge to convey the properly orientated sheet material.

In a typical configuration, the feed means is a set of feed rollers, the alignment member is a pivotally mounted mechanical gate assembly, and the leading edge alignment sensing means is a mechanical trigger member or photoelectric sensing means. Upon proper alignment, the latch means releases permitting the alignment member to rotate and deliver the leading edge of the aligned sheet material to transport means downstream from the alignment gate assembly. When the transport means is a roller set, its nip positively en-

gages the sheet material and thus maintains secure alignment as it drives the sheet material further along the intended paper path.

T102,004

ELECTROSTATOGRAPHIC CARRIER BEADS AND METHOD OF MAKING

Donald L. Doane, 836 Wilfred Rd., Berthoud, Colo. 80513, and Vincent W. Ting, 7900 Grasmere Dr., Boulder, Colo. 80301

Filed Nov. 9, 1981, Ser. No. 319,814

Int. Cl.³ G03G *9/10*

U.S. Cl. 430—108

No Drawing. 14 Pages Specification

Electrophotographic carrier beads, comprising steel shot as a core material, are coated and then cured by a single-pass manufacturing process, using a coating liquid consisting of a water-based modified epoxy whose three-dimensional, highly cross-linked cellular structure, is packed with a fluoropolymer. This water-based carrier coating makes use of the water-based modified epoxy described in U.S. Pat. No. 4,212,781. For a first example, this epoxy material is converted to an aqueous dispersion by mixing with deionized water, an aminoplast cross-linking resin (hexamethoxymethyl-melamine), fluorinated ethylene-propylene, and chromium oxide. This aqueous dispersion is coated onto steel shot by a single-pass fluidized bed manufacturing process. For a second example, this epoxy material is converted to an aqueous dispersion by mixing with deionized water, said aminoplast cross-linking agent, said fluorinated ethylene-propylene and a second fluoropolymer, polytetrafluoroethylene. This aqueous dispersion is coated onto steel shot in the same manner.

REISSUES

JULY 6, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,988

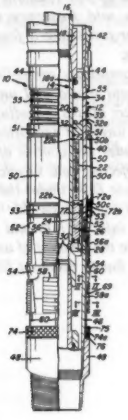
WELL TOOL

Charles D. Crickmer, Houston, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Original No. 4,047,565, dated Sep. 13, 1977, Ser. No. 671,209, Mar. 29, 1976. Application for reissue Sep. 29, 1980, Ser. No. 192,096

Int. Cl.³ E21B *33/129*

U.S. Cl. 166—217 **15 Claims**



1. A well tool for suspending well equipment in a well, the well tool comprising:

an elongated hanger mandrel;

a plurality of cones axially spaced on said mandrel;

a plurality of sets of slips axially spaced around said mandrel, each set of slips including a plurality of slips circumferentially spaced around said mandrel and positioned with respect to a different one of said cones to engage said one cone upon relative axial movement between the set of slips and the cone;

a plurality of elongated slip reins circumferentially spaced around said mandrel for controlling alignment of said slips during relative axial movement between the [set] *sets* of slips and the cones, each slip rein being secured to [a of slip from a] *one slip of each set of said* plurality of [said] sets of slips and each slip rein controlling the alignment of each slip to which it is secured.

Re. 30,989

SEALED VALVE AND RELATED STRUCTURE

Earl A. Bake, Pittsburgh, and William G. Lunt, Monroeville, both of Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 3,874,636, dated Apr. 1, 1975, Ser. No. 417,381, Nov. 19, 1973. Continuation of Ser. No. 770,730, Feb. 22, 1977, abandoned. Application for reissue Jul. 3, 1980, Ser. No. 165,419

Int. Cl.³ F16K *31/50*

U.S. Cl. 251—335 A **23 Claims**

9. A hermetically sealed valve comprising:

a body defining inlet and outlet passages intersecting a body cavity,

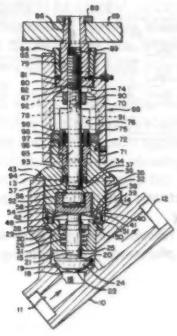
a valve seat,

a bonnet fixedly engaged with said body to close said cavity, said bonnet having a through bore opening into a hollow interior bounded by a *radially extending* depending annular surface,

a valve stem mounted for axial movement in said through bore and plunger means in said hollow bonnet portion,

a valve closure means disposed opposite said valve seat and mounted for axial movement toward and away from said seat,

a metal diaphragm disposed across the hollow interior portion of said bonnet between said plunger means and said



closure means and circumferentially welded to said *radially extending* depending annular surface to seal the interior of said bonnet from fluid present in the body cavity,

a circumferentially continuous weld between said bonnet and said body to seal against fluid leakage around said bonnet, and

means for moving said stem and plunger means to deflect said diaphragm and move said closure means to sealingly engage said valve seat.

Re. 30,990

BENZIMIDAZOLE DERIVATIVES, COMPOSITIONS THEREOF AND METHOD OF USE AS ANTHELMINTICS

Rudiger D. Haugwitz, and Barbara V. Maurer, both of Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Original No. 4,046,908, dated Sep. 6, 1977, Ser. No. 706,040, Jul. 16, 1976. Application for reissue Sep. 12, 1980, Ser. No. 186,823

Int. Cl.³ A61K *31/415*; C07D *235/32*

U.S. Cl. 424—273 B **3 Claims**

7. [The] *A* compound [as defined in claim **1**] having the name [5-[(2,2-dichlorocyclopropylmethyl)thio]-1H-benzimidazol-2-yl]carbamic acid, methyl ester.

9. A pharmaceutical composition for use in treating helminthiasis comprising a therapeutically effective amount of a compound as defined in claim [**1**] *7* and a pharmaceutically acceptable carrier therefor.

Re. 30,991

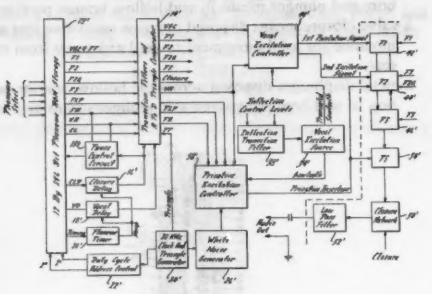
VOICE SYNTHESIZER

Carl L. Ostrowski, Mount Clemens, Mich., assignor to Federal Screw Works, Detroit, Mich.

Original No. 4,130,730, dated Dec. 19, 1978, Ser. No. 836,589, Sep. 26, 1977. Application for reissue Dec. 12, 1980, Ser. No. 215,681

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SM **20 Claims**



19. In an electronic device for phonetically synthesizing human speech including

input means response to input data identifying a desired sequence of phonemes for producing a plurality of control signals that electronically define each phoneme in said desired sequence of phonemes;

vocal source means for producing a voiced excitation signal;

fricative source means for producing an unvoiced excitation signal; and

vocal tract means responsive to said voiced and unvoiced excitation signals and certain of said plurality of control signals for substantially producing the frequency spectrums of each of said desired sequence of phonemes, including a first resonant filter tunable under the control of a first of said control signals for producing the first formant in said frequency spectrums, a second resonant filter serially connected to said first resonant filter and tunable under the control of a second of said control signals for producing the second formant in said frequency spectrums, a third resonant filter serially connected to said second resonant filter for producing the third formant in said frequency spectrums and a fourth resonant filter for producing a fourth formant in said frequency spectrums;

the improvement comprising controller means for controlling the injection of said voiced and unvoiced excitation signals into said vocal tract means including fricative control means for injecting said unvoiced excitation signal into said second resonant filter under the control of a third of said control signals and for injecting said unvoiced excitation signal into said fourth resonant filter under the control of the inverse of said third control signal such that the amount of unvoiced excitation energy injected into said second resonant filter is inversely related to the amount of unvoiced excitation energy injected into said fourth resonant filter.

PLANT PATENTS

GRANTED JULY 6, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,863

PEACH TREE (N30-12E)

Luther D. Davis, deceased, late of Davis, Calif., and by Donald R. Brooks, executor, West Sacramento, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 20, 1980, Ser. No. 198,787

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, which regularly and with high productivity bears large, uniform, globose, symmetrical, clingstone fruit having fine, moderately firm, non-melting flesh; the fruit, which ripens about three days ahead of the Carolyn, is slightly similar to the Gaume but is distinctive—in comparison—by absence of blossom end breakdown, by a larger stone less likely to split, and by a higher flavor both fresh and canned.

4,864

RED MAPLE

Glenn C. Jeffers, 700 Susan Dr., Fostoria, Ohio 44830

Filed Jul. 23, 1980, Ser. No. 171,647

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of red maple tree, *Acer rubrum*, substantially as described and illustrated, characterized by its upward habit of growth and good crotch angles; rapid growth rate; tolerance to drought conditions; pleasing lettuce green summer leaf color and excellent scarlet fall leaf color that persists.

PATENTS

GRANTED JUL. 6, 1982

ERRATA

For CLASS	See PATENT NO.
114–039	4,337,543
114–357	4,337,544
464–131	4,337,628
464–024	4,337,629
251–090	4,337,917
355–100	4,338,007
420–486	4,338,130
148–403	4,338,131
376–228	4,338,159
523–177	4,338,224
525–122	4,338,225
524–302	4,338,226
524–143	4,338,227
524–120	4,338,228
524–399	4,338,229
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523–214	4,338,231
523–414	4,338,232
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PATENTS

GRANTED JUL. 6, 1982

ERRATA

CLASS	PATENT NO.
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148-402	4,337,191
175-320	4,338,179
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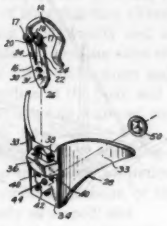
340-703	4,338,230
323-214	4,338,231
323-414	4,338,232
323-4111	4,338,233
323-300	4,338,234
324-704	4,338,235
324-120	4,338,236
324-177	4,338,237
324-700	4,338,238
324-749	4,338,239
324-184	4,338,240
323-200	4,338,241
323-419	4,338,242
324-247	4,338,243
324-109	4,338,244
324-100	4,338,245
324-100	4,338,246
328-207	4,338,247
340-214	4,338,248
525-062	4,338,403
525-066	4,338,404
521-127	4,338,413
372-070	4,338,577
372-023	4,338,578

PATENTS

GRANTED JULY 6, 1982

GENERAL AND MECHANICAL

4,337,539
NECKTIE KNOT SUPPORT ASSEMBLY
John Najarian, 257 Herbert Ave., Closter, N.J. 07624
Filed Jan. 8, 1981, Ser. No. 223,414
Int. Cl.[3] A41D *25/08, 25/02*
U.S. Cl. 2—153 **10 Claims**



1. A necktie knot support assembly for supporting a fabric pre-tied knotted necktie, said assembly comprising:

a main body member shaped to determine formation of the knot of said necktie,

a spring clamp adapted to inter-engage said main body member,

complementary means on said body member and said spring clamp, for snappably connecting and engaging said spring clamp to said body member while preventing dis-engagement therefor, said complementary means comprising barb-like projection means on said spring clamp, and receptor means on said body member which permit the inter-engagement of said spring clamp to said body member, and which prevent said dis-engagement, said receptor means receiving said barb-like projection means.

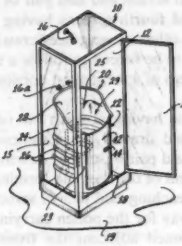
4,337,540
PORTABLE BATHING TUB ACCESSORY FOR SHOWER STALL
Patricia A. Lindeman, 7803 Nagle, North Hollywood, Calif. 91605
Filed Dec. 1, 1980, Ser. No. 211,918
Int. Cl.[3] A61H *33/02*
U.S. Cl. 4—546 **14 Claims**

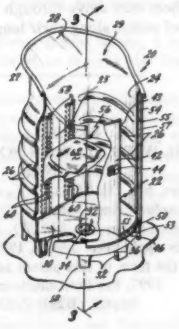
1. A portable bathtub accessory for use in a shower stall of the type having a shower head for spraying water and a drain for draining the water from the floor of the stall comprising in combination:

a free standing tub having a bottom and sidewall means defining an open top for receiving substantially all of said water spray, said tub being of sufficient width to permit a person to sit therein;

an access door in said sidewall means;

drain means for discharging water from said tub directly onto the underlying stall floor surface;

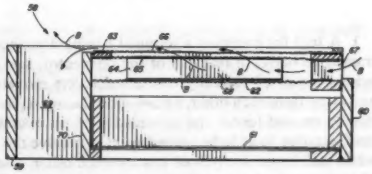




means operable from within said tub for opening and closing said drain means;

and, a seat provided within said tub.

4,337,541
POLLEN TRAP FOR BEEHIVES
Royden Brown, 4343 E. Keim Dr., Phoenix, Ariz. 85253
Filed Jan. 9, 1981, Ser. No. 223,935
Int. Cl.[3] A01K *47/06*
U.S. Cl. 6—4 R **6 Claims**



1. A pollen trap for collecting pollen from bees as they enter a vertically arranged beehive comprising:

a frame having an open top and dimensioned to fit as one of the axially positioned parts of a vertically stacked beehive,

a drawer slidably arranged in said frame to assume a substantially horizontal position in the hive,

said drawer having a bottom surface comprising a first screen, the mesh size of which is smaller than the pollen dropped thereon by the bees,

a second screen mounted in said frame above said drawer

and having a mesh size smaller than the size of the pollen carrying bees for prohibiting them from entering the drawer,

a pair of parallelly and spacedly arranged third and fourth screens mounted in a sub-frame on said frame, but offset above said second screen and forming a space between said second screen and said pair of screens,

said third and fourth screens having mesh openings offset from each other causing bees crawling through said pair of screens to be forced to follow a circuitous path divesting their legs of a substantial portion of the pollen carried thereon,

said sub-frame having at least one rail mounted longitudinally of said drawer juxtapositioned to the lowermost screen of said pair of screens downstream of the direction of movement of the bees and forming a ladder for the bees to use in reaching said pair of screens, and

an entranceway for the pollen carrying bees into the pollen trap positioned adjacent the front of said drawer and connected with said space between said second screen and said pair of screens,

whereby the bees may move through said pair of screens at a plurality of points along their lengths.

4,337,542

CRIMP TOOL WITH STATION FOR RIGHT ANGLE TERMINAL

Werner C. Theiler, Sr., Dix Hills, N.Y., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 899,337, Apr. 24, 1978, Pat. No. 4,229,849. This application Jun. 6, 1980, Ser. No. 156,934

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ B25B *7/22*

U.S. Cl. 7—107 **10 Claims**

1. A tool for crimping a terminal having a connector and a transverse barrel at one end of the connector, said tool comprising a pair of pivotally connected levers movable toward and away from each other, a first pair of facing regions longitudinally on said levers and provided with an overall recessed configuration so as to be spaced apart to receive the connector when said levers are moved toward each other, a second pair of facing regions on said levers at one end of said first pair of facing regions, initial complementary receiver and indentor means on said second pair of facing regions for crimping a terminal barrel of one size range with its connector protectively received between said first pair of facing regions, a third pair of facing regions on said levers at the other end of said first pair of facing regions, and additional complementary receiver and indentor means on said third pair of facing regions for crimping a terminal barrel of another size range with its connector protectively received between said first pair of facing regions.

4,337,543

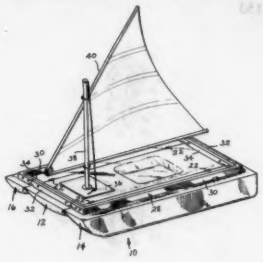
COLLAPSIBLE TRIMARAN BOAT

William R. Van Ulzen, 3155 N. U.S. Hwy. 35, La Porte, Ind. 46350

Filed Oct. 23, 1980, Ser. No. 199,971

Int. Cl.³ B63B *35/36*

U.S. Cl. 114—354 **5 Claims**



1. A collapsible trimaran-type boat comprising three parallel individual longitudinal float sections, each float section having two tapering sides and a top surface, said float sections constituting a center section of a generally inverted isosceles triangular cross-sectional configuration and port and starboard sections each of a generally right angle triangular cross-sectional configuration, one side of each port and starboard float section being the hypotenuse of said right angle triangular cross-sectional configuration, hinge components connecting said center float section at one upper corner edge of its top surface to said starboard float section at its top surface at the intersection of said one side thereof, other hinge components connecting said center float section at the opposite upper corner edge to said port float section at its top surface at the intersection of said one side thereof, said port and starboard float sections being pivotal relative to said center float section about said hinge components between a collapsed position where the hypotenuse of each port and starboard float section is juxtaposed with said-side of said center float section resulting in said boat at its float sections having a generally rectangular configuration and an operative floating position where said float section top surfaces are generally planar and said hypotenuses of said port and starboard float sections are angularly displaced from said sides of said center float section, and means for securing said port and starboard float sections in their operative floating position.

4,337,544

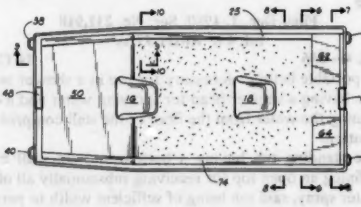
SPORT FISHING BOAT

Nancey J. Coulter, and Lawrence Coulter, both of P.O. Box 6, Boley, Okla. 74829

Filed Sep. 22, 1980, Ser. No. 189,814

Int. Cl.³ B63B *3/20, 5/24*

U.S. Cl. 114—357 **12 Claims**



1. A boat having a bow, a stern, a port side and a starboard side, and further including:

an outer hull having a trapezoidal transverse cross-section and having a bottom;

an inner hull spaced from the outer hull at opposite sides of the boat to define lateral spaces along each of the gunwales of the boat, said inner hull having:

a forward first portion inclined downwardly and extending rearwardly from the bow of the boat and spaced upwardly from the outer hull to define therewith a forward flotation chamber, and to also form an inclined ramp;

a pair of transversely spaced rear second portions adjacent the stern of the boat and spaced upwardly from the outer hull to define a pair of after flotation chambers, said second portions inclining downwardly and inwardly from the respective gunwales at opposite sides of the boat to a location adjacent the outer hull bottom and spaced from the fore and aft centerline of the boat; and

an inner hull bottom portion superimposed on, and contacting, the bottom of the outer hull;

flotation material disposed in said lateral spaces, forward flotation chamber and spaced, after flotation chambers to facilitate even and trimmed flotation of the boat in the water when completely swamped; and

a seat swivelly disposed in said boat immediately aft of said forward flotation chamber and facilitating resting of the feet of a fisherman seated in said seat upon said inclined ramp.

4,337,545

BRIDGES FOR PROVIDING ACCESS FROM A WATER-BORNE CRAFT TO THE SHORE

John Rose, 22 Royal Crescent, Glasgow G3 7SL, and James S. Pearson, 8 Burnside Ave., Kirkintilloch, both of Scotland

Filed Dec. 14, 1979, Ser. No. 103,706

Claims priority, application United Kingdom, Dec. 15, 1978, 48700/78

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.1 **11 Claims**

11. In a ship to shore bridge of the kind comprising a bridging beam having a ship end, a shore end and two lateral sides, for providing an access track from a shore or quay at said shore end to a water-borne craft at said ship end, said beam being supported at said shore end by a pivotal connection permitting pivoting of said beam around a generally horizontal axis, to enable said ship end of said beam to rise and fall,

the improvement comprising providing means for slewing said beam about a substantially vertical axis at said shore end between a stowed position and an operative position, said beam being so dimensioned that when it is in said stowed position it is substantially received in a recess in a quay edge with a side surface of said beam being substantially flush with the side surface of said quay, wherein said ship end of said beam is displaced from said recess when said beam is in said operative position; and providing a buoyancy tank attached to said ship end of said beam to support said ship end, the buoyancy of said buoyancy tank being adjustable, wherein said recess in the quay edge extends over substantially the full height of the quay thereby to accomodate said buoyancy tank within said recess below said bridging beam when said bridging beam is in the stowed position.

4,337,546

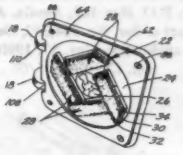
FLOOR POLISHER SUPPORT

Paul E. Phillips, Whitehall, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Apr. 25, 1980, Ser. No. 144,192

Int. Cl.³ A47L *11/162, 11/40*

U.S. Cl. 15—49 R **14 Claims**



1. A support attachment for a vertical axis, rotary floor machine of the type having a housing, a vertical axis floor treating element rotatably supported by said housing and a drive for rotating the element, said support attachment comprising:

a rigid generally planar frame having a centrally located aperture dimensioned to receive the floor treating element;

a shoe having the same general configuration as said frame;

means for attaching said shoe to said frame; and

a plurality of attachment means on said frame positioned around said aperture for releasably attaching said frame to the housing of the floor machine, said frame and said shoe dimensioned so that the weight of the machine will be supported on the attachment and the floor treating element will be confined within the frame and shoe.

4,337,547

SCREEN WIPER

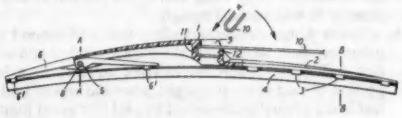
Theodore Hancou, Chene-Bougeries, Switzerland, assignor to Societe d'Exploitation de Brevets J.B., Fribourg, Switzerland

Filed Feb. 27, 1980, Ser. No. 125,059

Claims priority, application Switzerland, Dec. 1, 1979, 2018/79

Int. Cl.³ B60S *1/04, 1/40*

U.S. Cl. 15—250.42 **8 Claims**



1. A windshield wiper assembly intended to be detachably fitted on the end of a wiper arm, comprising:

(a) an elastically deformable elongated harness,

(b) pivot means disposed between the ends of said harness by which the arm may be pivotally attached to the harness,

(c) a support surface on said harness on the side to face the windshield and extending from the region of said pivot to one end of said harness, said support surface being concave with a predetermined radius prior to application of the assembly to the windshield, which support surface becomes less concave during application due to the elastic nature of said harness,

(d) claw means disposed at intervals along the length of said support surface,

(e) a yoke pivotally attached at its center to the other end of said harness,

(f) further claw means provided at each end of said yoke, and

(g) a wiper blade unit gripped by the claw means on both the

harness and yoke, having a portion lying in contact with said support surface over the length thereof and deformed to the same curvature as that of said support surface, the remaining portion of the wiper blade unit being supported by said yoke.

4,337,548

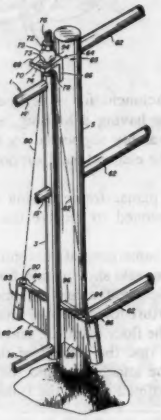
SELF-CLOSING DOUBLE HINGE

Thomas G. Bonar, P.O. Box 102, Aguila, Ariz. 85320

Continuation-in-part of Ser. No. 954,342, Oct. 25, 1978, Pat. No. 4,233,708. This application Nov. 17, 1980, Ser. No. 207,663

Int. Cl.³ E05F *1/06*

U.S. Cl. 16—311 **5 Claims**



1. A self-closing hinging apparatus for attaching a gate to a vertical upright, said gate having a first vertical edge and an opposite second vertical edge, said hinging apparatus comprising in combination:

a. an upper hinge device including swivel means having a first portion connectable in fixed relation to an upper portion of said vertical upright and a second portion connectable in fixed relation to an upper portion of said gate for swivellably supporting said upper portion of said gate relative to said vertical upright;

b. a lower hinge device including first and second pivot joints and first, second and third leaves, a first end of said first leaf being attachable in fixed relation to a lower portion of said vertical upright, a second end of said first leaf being pivotally connected by said first pivot joint to a first end of said second leaf, and second end of said second leaf being pivotally connected by means of said second pivot joint to a first end of said third leaf, a second end of said third hinge being attachable in fixed relation to a lower portion of said gate, said second leaf being substantially longer than said first and third leaves, said second leaf resting against said first leaf and said third leaf resting against said second leaf when said gate is closed, said second leaf pivoting away from said first leaf about said first hinge joint and raising a free end of said gate when said gate is opened in one direction, said third leaf pivoting about said second hinge joint away from said second leaf and raising the free end of said gate when said gate is opened in another direction; and

c. a reinforcing member rigidly attached to said upper hinge device and said lower hinge device for maintaining said first and second pivot joints substantially in alignment with said swivel means, said first and second pivot joints having first and second axes, respectively, said first and second axes being inclined with respect to said vertical upright, said first pivot joint resisting any lateral movement of the first end of said second leaf away from the second end of said first leaf, said second pivot joint resisting any lateral movement of the first end of said third leaf away from the second end of said second leaf, said reinforcing member being attachable in fixed relation to said gate.

4,337,549

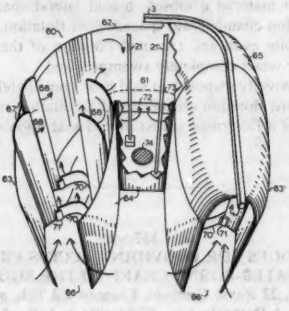
CARCASS CLEANING UNIT AND CONTAINMENT CHAMBER

Maynard E. Anderson, Hallsville; Robert T. Marshall, Columbia, and William C. Stringer, Rocheport, all of Mo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 94,539, Nov. 15, 1979, Pat. No. 4,279,059. This application Jul. 15, 1981, Ser. No. 283,596

Int. Cl.³ A22B *5/00*

U.S. Cl. 17—1 R **7 Claims**



1. An apparatus comprising a liquid spray unit and a containment chamber, wherein said containment chamber comprises:

a segment for enclosing a spray zone containing said spray unit, said segment having an entrance and an exit for the passage therethrough in a predetermined path of objects to be subjected to said spray unit;

an entrance vestibule segment contiguous with said spray zone segment entrance and an exit vestibule segment contiguous with said spray zone segment exit, wherein each of said vestibule segments has opposing side walls and an upper wall and is equipped with at least one pair of spaced apart baffles, wherein said baffles are attached to said opposing side walls and are symmetrically positioned with respect to one another on either side of said predetermined path at an angle oriented toward the spray zone such that they will act to reverse the direction of air currents and entrained liquid emanating from said zone.

4,337,550

HOG SPLITTER

David R. Baylor, Belding, Mich., and Byron J. Getter, Troy, Ohio, assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed Nov. 7, 1980, Ser. No. 204,939

Int. Cl.³ A22B *5/20*

U.S. Cl. 17—23 **15 Claims**

1. A hog carcass splitter to be used in combination with suspension means for suspending hog carcasses in inverted position, comprising:

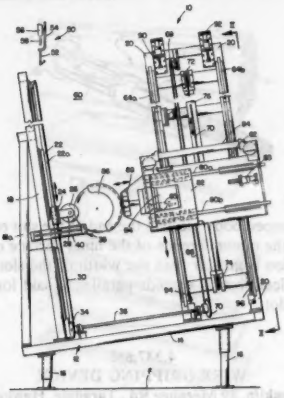
an upright guide tilted at an acute angle to the vertical such that the bottom thereof extends toward a location beneath the suspension means;

a configurated carcass-back retainer stop movable vertically along the length of said tilted guide;

carcass anchor means positioned along said guide for anchoring an inverted hog carcass in position;

an upright track spaced from said guide to be on the opposite side of the suspension means therefrom;

a cutter mounting carriage movable vertically along said track; a cutter supported by said carriage; said cutter being extensible toward said guide to a predetermined



spacing from said retainer stop, and retractable away from said guide; and

coordinate drive means to said retainer stop and said carriage for advancement thereof simultaneously in alignment with each other, along said guide and track respectively.

4,337,551

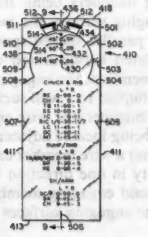
MEAT GRAIN TEMPLATE

Robert S. Weinhaus, 868 Albey La., St. Louis, Mo. 63132

Division of Ser. No. 41,492, May 22, 1979, Pat. No. 4,286,354. This application Aug. 3, 1981, Ser. No. 289,708

Int. Cl.³ A22C *17/00*

U.S. Cl. 17—52 **3 Claims**



1. A method of cutting meat across the grain comprising the steps of:

(a) turning the meat onto a reference surface,

(b) identifying the section to be cut,

(c) applying a marker to the meat section at a predetermined angle of inclination and at a predetermined horizontal angle,

(d) separating the component sections from the meat, and

(e) cutting the meat into portions by perpendicular cuts relative to the marker.

4,337,552

AUTOMATIC CRAB LEG SHELL CUTTING-IN MACHINE

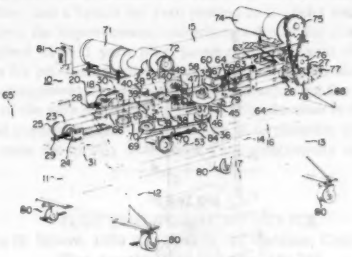
Shigeo Iwase, Hakodate, Japan, assignor to Taiyo Seisakusho Manufacturing Co. Ltd., Hakodate, Japan

Filed Nov. 24, 1980, Ser. No. 210,758

Claims priority, application Japan, Nov. 22, 1979, 54-150673

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—71 **5 Claims**



1. An apparatus for automatically cutting the shell from crab-legs comprising in combination:

(a) a frame (10), an elongated top plate (15) supported on said frame (10), said top plate (15) defining a work zone having an input feed hopper (65') at one end for receiving crab-legs and a defined output chute (68) at the other end;

(b) upper and lower endless feed belts (18, 23) each rotationally supported on rear and drive pulleys (20, 22, 25, 27), said pulleys being supported on said frame (10) at said one and the other ends of said work zone;

(c) gear boxes (32) defining a work station with a a feed side supported on said frame on both sides of said belts, said gear boxes (32) having a shaft (33) with rotary cutting-knife means (35);

(d) motor drive means (7,, 74) operatively coupled for driving said feed belts and said cutting-knife means;

(e) horizontal bell crank lever means (37) extending from each of said gear boxes towards the feed side of said work station, gear teeth (39) on each of said horizontal bell rank lever means (37) in engagement toward said feed side, resilient means (46, 47) connecting said gear boxes between both sides of said belts so that the gear boxes and cutting-knife means are properly spaced from said belts to work on crab-legs passing therebetween;

(f) at least one depressing plate (58) at said work station engaging said upper feed belt (18), front and rear rollers (49, 69) pressing down on said depressing plate (58);

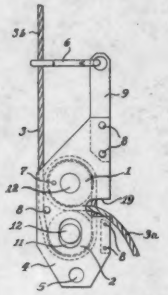
(g) rear upper and lower bell crank members, said upper bell crank members (48) being connected to said rear roller (49), said upper and lower bell crank members being disposed above and below the feed belts on said feed side, said bell crank lever members (48) having upward and downward extending vertical plates (50) with gear teeth in engagement at the respective lower and upper ends of said vertical plates; and,

(h) forward upper and lower bell crank members (59) each having a vertical plate (61) with teeth in engagement at the respective upper and lower ends of said vertical plates, spring means extending between said rear upper and lower bell crank members and said forward upper and lower bell crank members; whereby, crab-legs fed from said input feed hopper (65') are passed forward by said feed belts to said work station where the crab shells are cut and then onto said output chute (68).

4,337,553
APPARATUS FOR GUIDING AND CLAMPING FLEXIBLE ROPES AND THE LIKE

Manfred Fischer, Berlin, Fed. Rep. of Germany, assignor to Geroh GmbH Mechanische Systeme, Waischenfeld, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,633
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906517
Int. Cl.³ B66D 3/00
U.S. Cl. 24—68 R 7 Claims



1. Apparatus for guiding and firmly clamping an elongated flexible element such as a rope or cable:

said apparatus comprising a body supporting a plurality of rotatively mounted guide rollers for guiding said flexible element aligned in a plane;

a first of said guide rollers mounted on said body adjacent one end of said flexible element and selectively lockable against rotation in at least one direction relative to said body;

a second of said guide rollers mounted on said body adjacent another portion of said flexible element that is pulled to provide tension and mounted on said body for movement toward and away from said first guide roller so that said flexible element passing around both guide rollers and between adjacent portions thereof is pressed into a clamped position engaged against both rollers on opposite sides of said element when the second guide roller is moved toward said first guide roller and is released upon movement of said second roller in an opposite direction;

means for securing said body in a clamping position for securely holding said flexible element; and

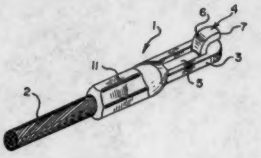
means for securing said body to a fixed point for pivotal movement about said point between said clamping position and a release position comprising a U-shaped element extending outwardly of said body with a pair of legs adjacent opposite sides thereof, said legs being pivotally connected to said body and including means for clamping said legs in a selected rotative position relative to said body.

4,337,554
STAMPED YOKE END AND METHOD OF MAKING SAME

Warren E. Sevrence, Adrian, Mich., assignor to Acco Industries Inc., Bridgeport, Conn.

Filed Jan. 11, 1980, Ser. No. 111,351
Int. Cl.³ F16G 11/00; B21D 53/58
U.S. Cl. 24—115 R 4 Claims

1. A stamped yoke end adapted to engage a lever arm, said yoke end comprising a flat stamped body piece having a tab cut from the inner area of the body piece to form a longitudinally extending rectangular slot in the body piece with the tab being bent to one side of said body piece wherein the end of the tab is spaced from and substantially parallel to said body piece and so that the surface of the tab adjacent a narrow end of the slot facing the slot forms a circular lever arm engaging surface having a section of constant radius with the longitudinal axis of the slot bisecting said tab, and a cylindrical portion adjoining

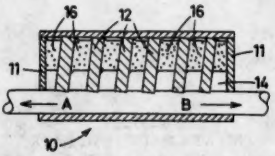


said flat stamped body piece at the end of the slot opposite said tab where the circumference of the inner surface of the cylindrical portion is greater than the width of the slot and where the cylindrical portion extends parallel to said longitudinally extending slot.

4,337,555
WIRE GRIPPING DEVICE

Peter J. Franklin, 49 Meeanee Rd., Taradale, Hawkes Bay, New Zealand

Filed Apr. 18, 1980, Ser. No. 141,637
Claims priority, application New Zealand, Apr. 19, 1979, 190226
Int. Cl.³ F16G 11/04; B25G 3/20
U.S. Cl. 24—249 R 11 Claims



1. A wire gripping device comprising a body, an internal cavity within said body, an opening into said cavity whereby a portion of a wire member can locate within said cavity, a plurality of wire engaging members located within said cavity, said wire engaging members being flat elongated members having a wire engaging surface, the wire engaging members being located in a parallel spaced-apart array by a resilient spacer member located between and coupling each pair of adjacent engaging members, the engaging member at each end of the array being coupled to a wall surface of said cavity by a said resilient spacer member, the wire engaging surfaces of the engaging members being located adjacent to but spaced from a fixed surface such that a wire member can be moved longitudinally into said cavity in one direction but is prevented from being removed by said engaging members wedging the wire member between the engaging surfaces thereof and said fixed surface.

4,337,556
BURIAL CASKET ASSEMBLY

Charles F. Winburn, and Wallace P. Blankenship, both of Batesville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed Oct. 30, 1980, Ser. No. 202,307
Int. Cl.³ A61G 17/00
U.S. Cl. 27—2 25 Claims

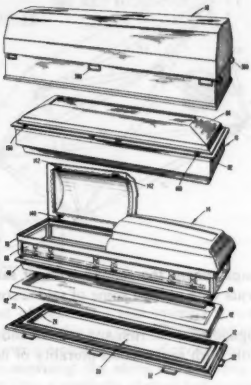
1. A burial casket assembly comprising:

a decorative casket comprising a decorative container and decorative cover,

said decorative container having a bottom and sides extending upwardly therefrom,

an insert casket insertable within said decorative casket, said insert casket comprising an insert container and an insert cover,

said insert container having a bottom and sides extending upwardly therefrom,



a base member on which said decorative casket is supported; and

a vault cover placeable onto said base to encase said decorative casket, said vault cover including a lower edge portion seatable upon said base.

4,337,557

METHOD AND APPARATUS FOR TEXTURIZING THERMOPLASTIC YARN

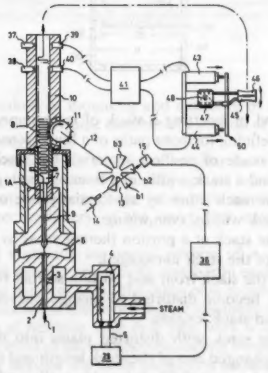
William J. McDonald, Belfast, and Brian Robinson, Clough, both of Northern Ireland, assignors to James Mackie & Sons Limited, Belfast, Northern Ireland

Continuation of Ser. No. 148,146, May 9, 1980, abandoned. This application May 27, 1981, Ser. No. 267,529

Claims priority, application United Kingdom, May 18, 1979, 7917326

Int. Cl.³ D02G *1/12*

U.S. Cl. 28—250 **15 Claims**



1. In a method of texturizing thermoplastic yarn by forwarding it in a heated condition to a crimping zone at the entrance of a stuffer chamber so as to form a plug of crimped yarn within the chamber and controlling the movement of the yarn at the other end of the plug at a speed which is related to the input speed, the improvement which comprises deriving signals from the speed of said yarn plug in said stuffer chamber and employing said signals to control the temperature of said yarn passing to said crimping zone in such a way as to maintain the speed and hence the quality of the bulk yarn substantially constant.

7. In apparatus for texturizing thermoplastic yarn comprising a stuffer chamber having a crimping zone at its inlet end, means for feeding yarn at a controlled rate to the inlet end of the chamber to form a plug of crimped yarn in said chamber, which yarn exits at a controlled rate from the outlet end of the chamber, and a heater for yarn passing to the inlet end of said chamber, the improvement comprising a device for monitoring the speed of said yarn plug passing through said chamber, means for producing corresponding control signals and a control arrangement for said yarn heater for adjusting the temperature of the yarn fed to the inlet end of the chamber in response to said control signals in such a way as to maintain the speed and hence the quality of the bulk yarn substantially constant.

4,337,558

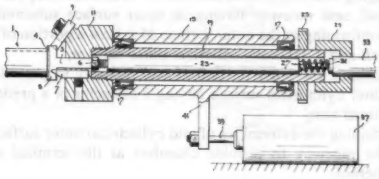
TUBE END FINISHING DEVICE

James D. Moore, 1550 "C" W. 139 St., Gardena, Calif. 90249

Filed Apr. 14, 1980, Ser. No. 140,245

Int. Cl.³ B23C *3/02*; B23B *51/16*

U.S. Cl. 29—33 T **7 Claims**



1. A method of finishing and deburring the open end faces of lengths of pipe without requiring precise lengthwise location of each length of pipe, and with minimum loss of time driving the finishing tools to the length of pipe, comprising:

in a rotating tool head capable of being laterally driven in either direction along its axis of rotation, fixedly mounting an inside bevel tool and an outside bevel tool, and slidably mounting a T-shaped facing tool,

clamping a length of pipe with the open end to be finished and deburred facing said tool head, fast feeding said tool head toward said length of pipe until said T-shaped facing tool contacts the end of said length of pipe,

allowing said T-shaped facing tool to slide inwardly in said tool head while maintaining sufficient pressure against said length of pipe to machine the end surface of said length of pipe,

sensing the magnitude of inward sliding of said T-shaped facing tool relative to said tool head,

when said T-shaped facing tool has moved a sufficient amount with respect to said tool head such that said inside bevel tool and said outside bevel tool are a predetermined finite small distance from said open end face of said length of pipe, automatically changing the drive of said tool head to a slow feed compatible with the proper cutting rate of said bevel tools,

when said T-shaped facing tool has moved a sufficient amount with respect to said tool head such that proper beveling and deburring of the inner and outer edges of said open end face of said length of pipe has been accomplished, automatically reversing the drive direction until said tool head has returned to its initial position, and automatically urging said T-shaped facing tool outwardly to its initial position with respect to said tool head.

4,337,559

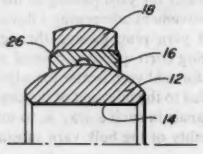
ROD END AND A METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

Edward Rangel, Aurora, Ill., assignor to Heim Universal Corporation, Fairfield, Conn.

Continuation of Ser. No. 778,820, Mar. 17, 1977, abandoned, Continuation of Ser. No. 958,921, Nov. 8, 1978, abandoned, Continuation of Ser. No. 106,425, Dec. 21, 1979, abandoned. This application Jul. 9, 1981, Ser. No. 281,741

Int. Cl.³ B21D *53/10*; F16C *23/04*

U.S. Cl. 29—149.5 B 3 Claims



1. A method for manufacturing rod ends, each of which comprises a rod end body, a race and a ball, said ball having a cylindrical opening, the steps comprising:

inserting said ball in a cylindrical sleeve having an axial length less than the axial length of said ball opening;

swaging said sleeve over said ball to form a raceway for said ball, said raceway having an inner surface substantially conforming to the outer surface of at least a portion of said ball and a generally spherical outer surface;

machining the outer portion of said raceway to provide an outer cylindrical surface having a diameter of a predetermined size;

machining the extremities of said cylindrical outer surface of the raceway to provide chamfers at the terminal ends thereof;

forming on a rod end body axial shoulders extending beyond sides of said body and providing opposite axial extensions of said rod end body about a cylindrical body opening extending through the body, the body opening having a diameter commensurate with the diameter of the outer cylindrical surface of the raceway;

inserting said ball and machined raceway into the opening of a rod end body;

swaging said axially extending shoulders inwardly toward said ball and raceway and into said chamfers thereby fixedly securing said ball and raceway in said body opening;

using the rod end bearing until loosening of the ball in the raceway is experienced, adjusting fit of the ball in the raceway by reswaging the shoulders inwardly toward said ball and said raceway and into the chamfers by applying forces to the swaged shoulders of the raceway in a swaging die and causing movement of material of the raceway thereby adjusting and restoring fit.

4,337,560

METHOD FOR ASSEMBLING LARGE SPACE STRUCTURES

Paul Slysh, San Diego, Calif., assignor to General Dynamics, Convair Division, San Diego, Calif.

Division of Ser. No. 930,823, Aug. 3, 1978. This application Dec. 17, 1979, Ser. No. 103,990

Int. Cl.³ B23P *11/00*; B64G *1/10*

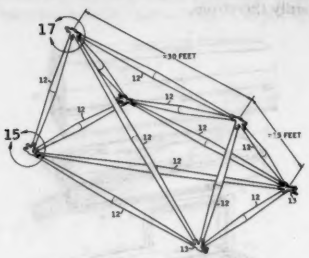
U.S. Cl. 29—155 R 4 Claims

1. A method for assembling a truss continuation constructed of struts and nodes to an existing truss structure comprising;

prying into engagement the first ends of a plurality of longitudinal struts with a first plurality of nodes on said existing truss;

prying into engagement the first ends of a plurality of diagonal struts with at least some of said first plurality of nodes on said existing truss;

prying into engagement the second ends of said plurality of longitudinal struts with a second plurality of nodes;



prying into engagement the second ends of said plurality of diagonal struts with at least some of said second plurality of nodes; and

prying into engagement the first and second ends of a plurality of cross struts with said second plurality of nodes.

4,337,561

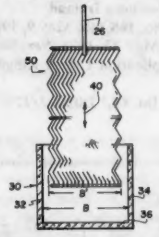
PLATE SEPARATOR CONSTRUCTION METHOD

William James, 19 Mansion Pl., Greenwich, Conn. 06830

Filed Aug. 3, 1981, Ser. No. 289,152

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—157 R 4 Claims



1. A method of inserting a stack of interconnected corrugated plates defining tortuous paths of a liquid separator therebetween and made of resilient material, the stack having a stack length and a stack width, in a housing having side walls separated from each other by substantially one of the stack length and stack widths, comprising:

engaging the stack at a portion thereof so as to leave a remainder of the stack unengaged;

suspending the stack from said portion so that the plates of the stack become distorted to change one of the stack widths and stack lenghts;

inserting the stack with distorted plates into the housing with the changed one of the stack length and stack width extending between the housing side walls; and

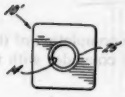
releasing the stack after it is in the housing so that the distorted plates, by the action of their resilient material, return the stack to one of its stack lengths and stack widths and so that the stack extends fully across the housing between its side walls.

4,337,562

METHOD OF RESTORING AN INDEXABLE CUTTING INSERT FOR REUSE

Rudolph H. Flueckiger, Rockford, Ill., assignor to Rockford Carbide Corporation, Roscoe, Ill.

Filed Apr. 7, 1980, Ser. No. 138,254
Int. Cl.³ B23P 6/00
U.S. Cl. 29—402.11 1 Claim



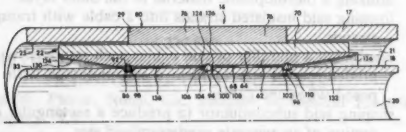
1. A method of renewing and resizing a worn indexable cutting insert having the shape of a substantially equilateral polygon and having a central hole of predetermined diameter, said method comprising the steps of, grinding the insert to form the insert into a similarly shaped but smaller equilateral polygon, pressing a tubular bushing within said hole with a tight press fit to reduce the effective diameter of the hole, reducing the effective outer diameter of said bushing and maintaining the effective inner diameter of said bushing substantially constant as said bushing is pressed into said hole.

4,337,563

METHOD OF ASSEMBLING MULTIPLE WALL DRILL PIPE

Floyd W. Becker, and Richard R. Regimbal, both of Calgary, Canada, assignors to Drill Systems, Inc., Calgary, Canada

Division of Ser. No. 890,068, Mar. 27, 1978, Pat. No. 4,274,663.
This application Jul. 7, 1980, Ser. No. 166,143
Int. Cl.³ B23P 11/02
U.S. Cl. 29—451 4 Claims



1. The method of mounting and assembly of an inner pipe member and an outer pipe member of a section of multiple wall drill pipe, comprising:

forming and locating a series of annular inner grooves and annular outer grooves in axially spaced relationship along the outer periphery of the inner pipe member and along the inner periphery of the outer pipe member, respectively;

mounting a radially innermost portion of a resilient compressible annular connecting member in each of the annular inner grooves along the inner pipe member for permanent association therewith during assembly and use of the section of multiple wall drill pipe with a radially outermost portion of the annular connecting member extending radially beyond the outer peripheral surface of the inner pipe member;

inserting one end of the inner pipe member into one end of the outer pipe member and causing relative axial displacement between the inner pipe member and the outer pipe member toward the assembled position;

sequentially compressing the annular connecting members during the relative axial displacement of the inner pipe relative to the outer pipe while maintaining each annular connecting member in the associated one of said inner grooves of the inner pipe member;

continuing the relative axial displacement between the inner pipe member and the outer pipe until all the inner grooves are axially aligned with all the corresponding outer grooves; and

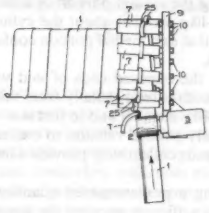
then terminating the relative axial displacement between the inner pipe member and the outer pipe member and expanding the radially outermost portions of annular connecting members into the outer grooves to permanently connect and axially locate the inner pipe member relative to the outer pipe member during use of the section of multiple wall pipe in a drilling operation.

4,337,564

MACHINE AND METHOD FOR FORMING TUBES FROM A STRIP

Stanley W. O. Menzel, Adelaide, Australia; David E. Mominee, Alpine, and Gilbert W. Vance, Jamul, both of Calif., assignors to Rib Loc Hong Kong Limited, Hong Kong, Hong Kong

Filed Sep. 28, 1979, Ser. No. 80,044
Int. Cl.³ B23P 11/02
U.S. Cl. 29—453 26 Claims



1. The method of forming tubes from strip which comprises:

(a) feeding forward a strip having a complementary rib and groove spaced apart on the said strip to each extend longitudinally on the said strip and oppositely facing on the said strip,

(b) guiding the said strip into a helical configuration with the said rib in register with the said groove after one revolution of the said helix to overlap edge portions of the said strip,

(c) pressing together the said overlapping parts of the said strip while maintaining a differential feed pressure between that part of the said strip being fed and at least that part of said strip being guided into said helical configuration,

(d) the said differential pressure is achieved by feeding the said strip to between a joining roller and a pressure roller, engaging one of the said rollers with one side of the strip to drive the strip forward longitudinally while preventing the other of said rollers from substantially opposing the driving force of said one roller, guiding the said strip beyond the said rollers into a helical convolution to bring the said rib in line with the said groove at the said rollers, also engaging a part of the helical convolution of the strip between the said rollers, and continuing to drive the said strip forward while pressing the said rib into said groove while maintaining said differential feed pressure on the part of said strip being fed and that part of the strip forming the helical convolution to cause the said strip to be joined to the said convolution, and

(e) the said strip and the said part of said convolution are engaged between the said rollers but said one roller is divided to have two sections, one to engage the said part of said strip being fed, and the other to engage the said part of said convolution, and driving the sections of the

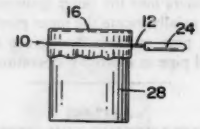
divided roller at different rates of rotation whereby to achieve the differential feed pressure.

4,337,565

DISPOSABLE COOKING UTENSILS

Michael Diana, 501 Cleveland Ave., SW., Largo, Fla. 33540

Filed Mar. 10, 1980, Ser. No. 128,534
Int. Cl.[3] B21D *39/00;* B23P *11/00*
U.S. Cl. 29—509 2 Claims



1. A method of hand-forming three dimensional cooking utensils such as frying pans, sauce pans and the like, comprising the steps of:

(a) procuring a substantially rigid, generally cylindrical, three dimensional object to serve as a mold, said object having the dimensions and configuration of the desired utensil, and positioning said object in upstanding configuration on a support surface,

(b) wrapping the medial portion of a predetermined length of a wire-like member about the cylindrical walls of said object so that said medial portion conforms to the shape of said walls,

(c) bending the opposed ends of said wire-like member so that said ends extend radially from said medial portion of said wire-like member and so that said ends are disposed in substantially parallel relation to one another, so that said opposed ends collectively provide a handle means for said utensil,

(d) procuring a predetermined quantity of aluminum-type foil means sufficient to cover the uppermost free end and the cylindrical sidewalls of said object,

(e) conforming said foil means to the shape of said object by manipulating said foil means by hand,

(f) protruding said object with the formed foil thereon through the wire-like member conformed to the shape of the object,

(g) reversely folding the peripheral edges of the foil means to wrappingly engage the wire-like member to said foil means, thereby forming a wire-like member/foil means assembly,

(h) separating said assembly from said object, and

(i) discarding said foil means only after sufficient use thereof and retaining said wire-like member and said object to facilitate the hand-forming of additional utensils as required.

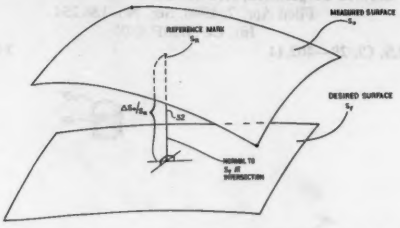
4,337,566

GAUGING SYSTEM FOR MACHINING SURFACES

Paul DiMatteo, Huntington; Robert Segnini, Stony Brook, and Paul Rademacher, Glen Head, all of N.Y., assignors to Solid Photography, Inc., Melville, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,435
Int. Cl.[3] B23P *13/02;* B23C *3/16;* B23B *35/00*
U.S. Cl. 29—558 11 Claims

1. A method for removing material from an object to provide a desired finished surface, comprising the steps of: drilling holes into the object so that the bottoms of the holes lie on the desired finished surface, said holes having a shape so that the observed hole diameter at the prevailing surface of the object is dependent on the hole depth and thereby dependent on the amount of material remaining to be removed between the prevailing surface and the desired finished surface; observing and measuring the prevailing surface; calculating depths of material to be removed in a sequence of material removing steps dependent on measurements of the prevailing surface and desired finished surface; controlling the depth of material removed from said calculating step during each of said material removing steps; and carrying out said material removing



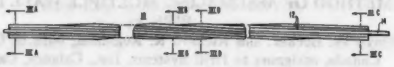
steps in sequence so that after the completion of the last step the surface exposed on the object coincides with the desired finished surface.

4,337,567

METHOD OF MAKING A CONDUCTOR BAR FOR DYNAMOELECTRIC MACHINES

Robert Lugosi, Monroeville; George J. Fechko, Pittsburgh; Alan T. Male, Murrysville; Henry E. Haller, III, Pittsburgh, and Cecil J. Mole, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 945,985, Sep. 27, 1978, Pat. No. 4,260,924.
This application May 16, 1980, Ser. No. 150,483
Int. Cl.[3] H02K *15/04*
U.S. Cl. 29—596 4 Claims



1. A method of forming a conductor bar for a dynamoelectric machine comprising the steps of

insulating strands of wire with at least two layers of insulating material,

utilizing a thermoplastic material as the outer layer,

forming said insulated strands into a cable with transposed strands,

combining a plurality of said cables with insulated wires of predetermined size to form a subconductor with transposed wires and cables,

shaping said subconductor to produce a rectangular cross-section of an accurate predetermined size,

cutting said subconductor to a predetermined length,

placing said predetermined length of subconductor in a die and heating the subconductor so as to set the thermoplastic insulating material on the strands to form a rigid bar,

bending the subconductor bars at predetermined locations along its length to produce at least one Roebel transposition from one end of the subconductor bar to the other,

compressing the subconductor bars adjacent the bends in a plane at right angles to the angle of the bends,

testing the compressed subconductor bars for strand to strand shorts,

placing a predetermined number of subconductor bars in two separate stacks,

twisting the two stacks together to form a conductor with the subconductors making at least one Roebel transposition between its ends,

applying a resin to the conductor at the location of the bends in the subconductors,

placing the conductor with the resin applied in a mold which shapes the conductor to an accurate predetermined size,

allowing the resin to set while the conductor is disposed in the mold,

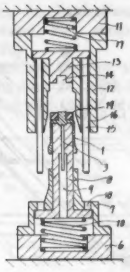
removing the conductor from the mold, and testing for subconductor to subconductor shorts.

4,337,568

PROCESS FOR FABRICATING CUP-SHAPED CORELESS ARMATURE

Masanori Morisawa, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 21, 1980, Ser. No. 142,120
Claims priority, application Japan, Apr. 24, 1979, 54-051172
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 **9 Claims**



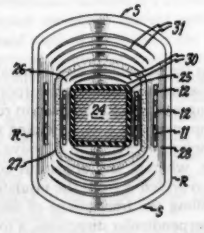
1. A process for molding and shaping a cup-shaped coreless armature comprising the steps of winding conductors a specified number of turns in the form of a cup to obtain an armature winding, placing the armature winding and an armature component including a commutator into a heating die assembly along with a molding resin member in the form of a solid at room temperature, the heating die assembly including relatively movable outer and inner die members formed to define the outer, inner and end dimensions of the armature, relatively moving the die members while melting the resin member to progressively shape the armature winding and cause the molten resin to flow into the space defined by the die assembly, and thereafter curing the resin to rigidly unite the armature winding and the armature component including the commutator with the resin.

4,337,569

METHOD OF MAKING INTEGRALLY FORMED TRANSFORMER COOLING DUCTS

Linden W. Pierce, Rome, Ga., assignor to General Electric Company, N.Y.

Continuation of Ser. No. 881,216, Feb. 27, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,450
Int. Cl.³ H01F *41/06*
U.S. Cl. 29—605 **1 Claim**



1. A method for forming a transformer winding having integral cooling ducts comprising the steps of:

providing a plurality of layers of transformer wires around a rectangular core opening to define a quasi-rectangular transformer winding having first and second pairs of opposing sides;

inserting a plurality of spacers between said wire layers on said first pair of said opposing sides of said winding to define first cooling ducts for the transport of vaporizable coolant; and

applying pressure to said first pair of said opposing sides to take up the stacking allowance thereat and cause said second pair of opposing sides to elongate, whereby to create separations of said wire layers proximate said second pair of sides, said separations defining second cooling ducts for the transport of vaporizable coolant through said windings, at least said second cooling ducts having a range in thickness from about 0.20 to 0.50 inches.

4,337,570

ELECTRICAL FUSELINKS

Kazimierz W. Woznica, Corsley, England, assignor to Kenneth E. Beswick Limited, Frome, England

Filed Dec. 3, 1980, Ser. No. 212,370
Claims priority, application United Kingdom, Dec. 3, 1979, 7941695
Int. Cl.³ H01H *69/02*
U.S. Cl. 29—623 **5 Claims**

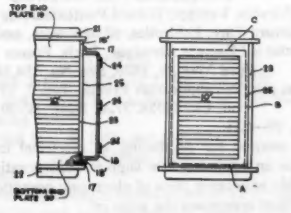
1. In the manufacture of electrical cartridge fuselinks wherein fuse elements are produced by mounting fusible members on insulating supports between conductive end zones of said supports, and said fuse elements are disposed within insulating barrels with said conductive end zones electrically connected to end terminals of said barrels, the improvement which facilitates the rapid and multiple production of said fuse elements comprising the steps of disposing a continuous length of said fusible member along a continous strip of insulating material, adhering metallic layers to said continuous fusible member and strip at spaced attachment zones along said strip to attach said continuous fusible member to said strip, and severing said continuous fusible member and strip at said spaced attachment zones to produce individual ones of said fuse elements.

4,337,571

METHOD FOR PRODUCING A FUEL CELL MANIFOLD SEAL

Paul E. Grevstad, West Hartford; Carl K. Johnson, Manchester, and Anthony P. Mientek, Glastonbury, all of Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 27,690, Apr. 6, 1979, Pat. No. 4,212,929. This application Nov. 6, 1979, Ser. No. 91,843
Int. Cl.³ H01M *2/08, 8/00*
U.S. Cl. 29—623.2 **3 Claims**



1. A method for producing a fuel cell manifold-to-stack seal

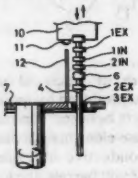
which eliminates damage to the seal by the sliding motion of the seal against the rough surface of the fuel cell stack as it undergoes compressive creep, comprising the steps of: providing a polymer seal frame which includes a sealing means between the manifold and the fuel cell stack for producing a seal therebetween, securing the polymer seal frame between the manifold and the fuel cell stack such that as the stack creeps the seal frame creeps with it, with sliding motion being between the seal frame and the manifold while maintaining a sealing effect therebetween, immovably securing one end only of the manifold to the fuel cell stack, and maintaining the manifold against the polymer seal frame and fuel cell stack to produce a desired seal loading thereon.

4,337,572

DEVICE FOR MANUFACTURE OF ASSEMBLED CAM SHAFT

Akio Takahashi, Toyota; Chiaki Tsumuki, Aichi; Hitoshi Nakamura, and Juro Ozaki, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 939,857, Sep. 5, 1978, Pat. No. 4,265,388. This application Feb. 19, 1981, Ser. No. 236,212
Claims priority, application Japan, Sep. 8, 1977, 52-108174
Int. Cl.³ B23P *19/02, 19/04*
U.S. Cl. 29—792 **4 Claims**



1. Camshaft assembling apparatus comprising,
means for supporting a camshaft in a predetermined circumferentially oriented position for axial movement,
a rotary table having a plurality of cam supporting stations, each moveable into axial alignment with said shaft,
means at each cam supporting station for supporting a cam with its lobe in a predetermined angular position so that each cam is properly angularly oriented relative to the cam shaft upon movement of its station on the table into axial alignment with the shaft, and
drive means for moving said cam shaft axially into said cam elements in succession to press the respective cam elements onto the shaft in a predetermined angular orientation with respect to the shaft and with respect to each other.

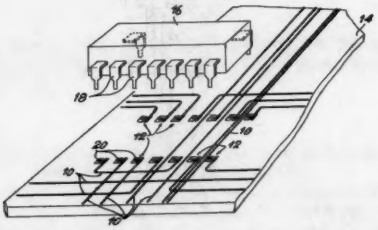
4,337,573

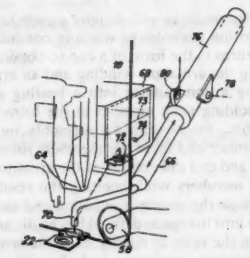
METHOD FOR CONSTRUCTING AN ELECTRICAL INTERCONNECTION CIRCUIT AND APPARATUS FOR REALIZING THE METHOD

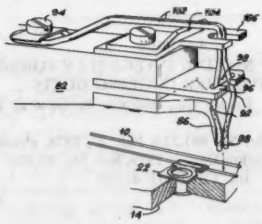
Gérard Nicolas, Voreppe; Gérard Ponthenier, Le Pont de Claix, and Gérard Turc, Echirolles, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 29, 1980, Ser. No. 154,144
Claims priority, application France, Jun. 7, 1979, 79 14592
Int. Cl.³ H05K *3/20;* **B23P** *19/00*
U.S. Cl. 29—831 **10 Claims**

1. A method for producing an electrical interconnection circuit on an insulating base support incorporating conductive zones able to receive clips of electronic components, wherein said method comprises the steps of:
providing conductive zones comprising pellets, each defining a connector adapted to receive one of said clips, a wire welding zone, and a zone of reduced width area acting as a thermal shunt between said connector and said welding zone;
joining the different conductive zones to be interconnected by adhering a thermally weldable insulating wire to said base support;
depositing liquid flux on parts of the wire to be welded resting on said wire welding zones;
welding said parts of the wire to said wire welding zones;
cutting said wire after welding to form in said wire a welded end and an unwelded end;
gripping said unwelded end of the wire; and
bringing said unwelded end of the wire into contact with another wire welding zone.







3. An apparatus for producing an electrical interconnection circuit on an insulating base support incorporating conductive zones each defining a connector adapted to receive one clip of an electronic component and a wire welding zone, said insulating base support being covered with adhesive resin outside said conductive zones, wherein said apparatus comprises an X-Y coordinate table to which is fixed the insulating base support, means for controlling the translations of said table in accordance with two perpendicular directions, a tool-carrying head constituted by a fixed shaft and a rotary frame connected to the shaft, means for controlling the rotation of the frame about an axis perpendicular to the support, means carried by the fixed shaft for uncoiling a thermally weldable insulated wire, means carried by the rotary frame for applying the wire to the sup-

port, means carried by the rotary frame for depositing a given quantity of liquid flux on parts of the wire to be welded resting on a conductive zone, means carried by the rotary frame for simultaneously baring and welding the thermally weldable wire to said welding zones, means carried by the rotary frame for cutting the wire after welding to form in said wire a welded end and an unwelded end, and means carried by the rotary frame for gripping the unwelded end of the wire to bring the latter into contact with another welding zone.

4,337,574

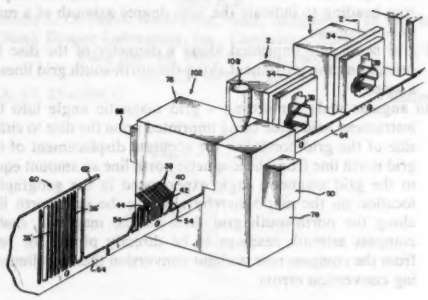
METHOD OF MANUFACTURING ELECTRICAL CONNECTOR RECEPTACLES

Donald W. K. Hughes, Mechanicsburg, Pa., and John H. F. Lauterbach, Clearwater, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 969,504, Dec. 14, 1978, Pat. No. 4,231,628. This application Oct. 24, 1980, Ser. No. 200,113

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—883 **4 Claims**



1. A method of making electrical connector receptacles of the type comprising an insulating housing havng a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors with each of said conductors having an intermediate portion in side-by-side spaced-apart relationship, each of said conductors comprising a first end which serves as a contact spring extending from one of said internal sidewalls diagonally into said opening and towards said rearward end, an intermediate portion extending from said plug-receiving end through said housing between said one internal sidewall and the adjacent external sidewall and towards said rearward end, and a second end which extends externally of said housing, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact springs, said method comprising the steps of:

stamping a continuous strip of conductive sheet metal to produce a continuous strip comprising a carrier strip having groups of blanks for said conductors extending therefrom at spaced intervals with the number of conductor blanks in each group being equal to the number of conductors in said connector receptacle,

feeding said strip through a forming die and forming said conductor blanks to the shape of said conductors in said connector receptacle,

intermittently feeding said strip to a molding apparatus having a mold cavity which conforms to the shape of said housing and having core pins in said mold cavity which conform to the shape of said plug-receiving opening, positioning one of said groups of formed conductors in said cavity with said contact portions of said conductors held between said core pins,

injecting molding materjal into said cavity, opening said mold, and feeding said strip whereby,

said strip, when it emerges from said mold, has connector housings molded on each of said groups of conductors with molding material surrounding said intermediate portions of said conductors.

4,337,575

RAZOR BLADE ASSEMBLY

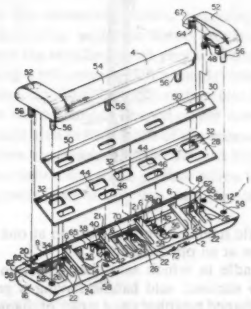
Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 176,138, Aug. 7, 1980. This application Jan. 29, 1981, Ser. No. 229,623

The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.

Int. Cl.³ B26B *21/22*

U.S. Cl. 30—47 **11 Claims**



1. A razor blade assembly comprising a platform including a base portion, a cap portion fixed to said platform, first arm means extending from said base portion and connected to a guard portion, said first arm means being adapted to flex about its juncture with said base portion to facilitate arcuate movement of said guard portion about said base portion, a first blade comprising a first cutting edge strand portion and a first base strand portion parallel to and spaced from said first cutting edge strand portion, said first cutting edge and first base strand portions being connected to each other by first interconnecting strand portions, a second set of arms extending from said base portion and supporting said first blade, said second set of arms being adapted to flex about its junctures with said base portion to facilitate arcuate movement of said first cutting edge strand portion about said base portion, a second blade comprising a second cutting edge strand portion and a second base strand portion parallel to and spaced from said second cutting edge strand portion, said second cutting edge and second base strand portions being connected to each other by second interconnecting strand portions, a third set of arms extending from said base portion and supporting said second blade, said third set of arms being adapted to flex about its junctures with said base portion to facilitate arcuate movement of said second cutting edge strand portion about said base portion.

4,337,576

KNIFE WITH RETRACTABLE BLADE

Jim L. Drost, and Myron K. Gordin, both of P.O. Box 289, Oskaloosa, Iowa 52577

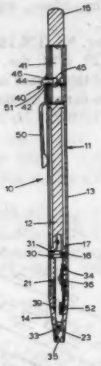
Filed Nov. 6, 1980, Ser. No. 204,647

Int. Cl.³ B26B *1/08*

U.S. Cl. 30—162 **7 Claims**

1. In a knife having a tubular barrel member with a longitudinal bore, a tubular tool support member located within said barrel member bore for slidable movement therein between

operative and inoperative positions, releasable latch means coacting between said barrel member and said support member to releasably lock said support member in said operative position, and a blade assembly located within said barrel member bore and engageable with one end of said support member for movement therewith between said inoperative position wherein said blade assembly is retracted inwardly from said one end of said barrel member and an operative position wherein a portion of said blade assembly extends outwardly from said barrel member one end, the improvement wherein said blade assembly comprises:



(a) a blade having a cutting portion at one end and a shank portion at an opposite end,

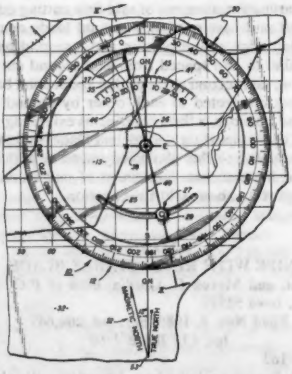
(b) a handle in which said shank portion of said blade is rigidly secured, said handle having a generally cylindrically shaped periphery and a pair of diametrically opposed tension means that extend beyond the handle periphery to engage the bore of said barrel member as said blade assembly is moved into said operative position to reduce undesired side-to-side movement of said blade when cutting pressure is exerted thereon.

4,337,577

DECLINATION TRANSPOSER

Noel J. Hotchkiss, Elbridge, N.Y., assignor to Declitractor, Inc., Elbridge, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,320
Int. Cl.³ G01C *21/20*
U.S. Cl. 33—1 N **3 Claims**



1. An instrument for use in conjunction with a hand held magnetic compass for solving land navigation problems by directly transposing grid and magnetic values when reading or plotting magnetic directional values on a map, the instrument including

a transparent circular base having a circular recess formed in its top surface that is coaxially aligned with the axis of the base and a plannar bottom surface whereby the base is seatable in a flat position upon a map having grid lines printed thereon when either plotting or reading azimuths on the map,

a transparent circular disc seated in said circular recess that has a close running fit with the sidewalls of the recess whereby the disc rotates in the recess about the axis of said base,

said disc and said base both containing a discernible opening that passes through the axis of the instrument whereby the instrument can be quickly and accurately aligned on a map,

a compass rose imprinted about the outer periphery of the base having indicating lines representing compass points passing inwardly in a radial direction from the outer edge of the base toward the axis thereof whereby compass headings can be accurately read or plotted on a map,

a magnetic north line imprinted upon the base that extends radially from the axis of the base to the zero degree compass rose heading to indicate the zero degree azimuth of a magnetic compass,

a grid north line imprinted along a diameter of the disc for orientating the instrument along the north-south grid lines of a map,

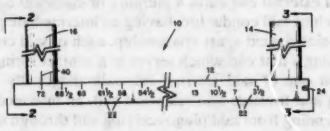
an angular scale for setting a grid magnetic angle into the instrument, said scale being imprinted upon the disc to either side of the grid north line for accurate displacement of the grid north line from the magnetic north line an amount equal to the grid magnetic angle experienced in the geographic location on the map whereby aligning the grid north line along the north-south grid lines on the map will enable compass azimuth readings to be directly plotted or read from the compass rose without conversion thereby eliminating conversion errors.

4,337,578

MEASURING DEVICE

Emery L. Seals, Rte. 5, Box 294, Morristown, Tenn.

Filed Mar. 16, 1981, Ser. No. 244,243
Int. Cl.³ G01B *5/02*
U.S. Cl. 33—125 R **1 Claim**



1. A device for measuring lengths of yarn and the like comprising:

an elongated base member having a generally U-shaped cross section which defines a longitudinally extending slot;

a first cylindrical post projecting from a longitudinal side of said base member and fixedly connected to said elongated base member at one end of said longitudinally extending slot;

a second cylindrical post projecting from the same longitudinal side of said base member as said first cylindrical post;

means for mounting said second post member to said base member in said longitudinally extending slot for selected movement toward and away from said first post member along said longitudinally extending slot;

said first and second posts being of the same diameter; and said mounting means comprising:

fastener means having a head larger than the width of said slot of said base member and disposed in the hollow interior of said base member, and a threaded shank projecting

from said head through said elongated slot of said base member; and,

said second post being formed with a threaded aperture for threadably receiving said threaded shank;

said second post being theaded onto said shank to tightly capture the edges of said base member defining said slot between said second post and said head of said fastener means, at any location along said elongated slot;

measuring indicia comprising a plurality of marks on said base member, the first mark corresponding to the shortest length measurable by said measuring device being spaced from the centerline of said first post toward said second post by a distance substantially equal to the sum of the radii of said first and second posts and corresponds to a linear measurement substantially equal to the circumference of said first post plus two times the diameter of said first post.

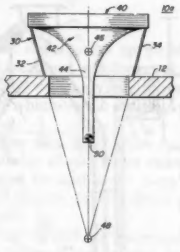
whereby a complete turn of yarn encompassing said first and second posts is the length denominated by said indicia.

4,337,579

DEFORMABLE REMOTE CENTER COMPLIANCE DEVICE

Thomas L. De Fazio, Watertown, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 16, 1980, Ser. No. 140,768
Int. Cl.³ G01B 5/25
U.S. Cl. 33—169 C **4 Claims**



1. A deformable remote center compliance device comprising: a base; an intermediate member; deformable support means disposed along radii from a first motion center interconnected between said base and said intermediate member; and operator means having a first upper rigid portion interconnected with said intermediate member and a second lower deformable portion having a second motion center for establishing a remote center of compliance between said first and second centers of motion at, near or beyond the end of said operator means; said lower deformable portion having a reduced cross-section relative to said upper rigid portion.

4,337,580

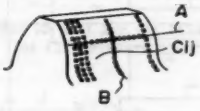
METHOD FOR INSPECTING GEAR CONTACT PATTERNS

Takashi Tanno, and Shigemitsu Koike, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jul. 14, 1980, Ser. No. 168,702
Claims priority, application Japan, Jul. 14, 1979, 54-89457; Aug. 29, 1979, 54-110851
Int. Cl.³ G01B 5/28, 7/28, 7/34
U.S. Cl. 33—179.5 R **20 Claims**

1. Method for inspecting a gear contact pattern on a tooth surface of a gear tooth of a gear which comprises the steps of determining on the tooth surface of the gear tooth a plurality of regularly located measuring points, establishing a standard tooth profile for the measuring points, measuring the tooth surface at the measuring points to detect deviations of the tooth surface from the standard tooth profile at the measuring points, determining a reference which is the deviation of maximum positive value, counting the number of the measuring points of which deviations are within a predetermined limit of the reference, determining a gear contact ratio which is a ratio of the counted number of the measuring points to the total number of the measuring points so as to select gears in which the gear contact ratio is above a predetermined value.

9. Method for inspecting a gear contact pattern on a tooth surface of a gear tooth of a gear which comprises the steps of determining on the tooth surface of the gear tooth a plurality of regularly located measuring points, establishing a standard



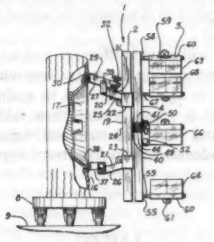
tooth profile for the measuring points, measuring the tooth surface at the measuring points to detect deviations of the tooth surface from the standard tooth profile at the measuring points, determining a reference which is the deviation of maximum positive value, dividing the tooth surface into four triangular corner zones and a diamond-shaped center zone, counting the number per unit area in each zone of the measuring points of which deviations are within a predetermined limit from the reference, and accepting the tooth surface when the counted number in the center zone is not less than that in the other zones.

4,337,581

TARGET STRUCTURE FOR USE WITH AN ALIGNMENT APPARATUS

Leonard F. Eck, McPherson, Kans., assignor to Kansas Jack, Inc., McPherson, Kans.

Filed Feb. 19, 1980, Ser. No. 122,530
Int. Cl.³ G01B 11/275
U.S. Cl. 33—288 **13 Claims**



1. A target structure mountable upon a wheel of a vehicle for checking the alignment thereof and comprising:

(a) a target support;

(b) means for mounting said target support to a wheel in laterally spaced relationship to a side of said wheel; and

(c) a plurality of targets attached to said target support and respectively having a planar portion extending laterally of the side of said wheel and spaced radially from the rotational axis of said wheel;

(d) said plurality of targets including four said targets respectively positioned on horizontal and vertical cardinal locations around said wheel;

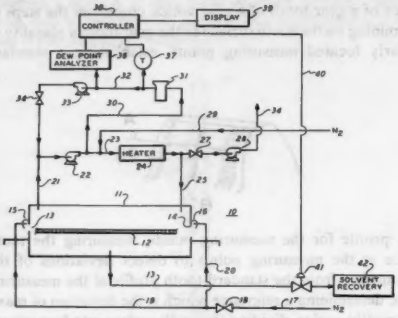
(e) said cardinal locations including vertically aligned upper and lower locations and horizontally aligned front and rear locations.

4,337,582

METHODS FOR CONTROLLING VAPOR CONCENTRATIONS IN AN ATMOSPHERE

Stephen E. Smith, Wyckoff, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Sep. 30, 1980, Ser. No. 192,582
Int. Cl.[3] F26B 3/04
U.S. Cl. 34—27 2 Claims



1. The method of maintaining a predetermined degree of saturation of solvent vapor in a curing oven to which an inert gas is supplied while the oven is maintained at a temperature between 200°–600° F. such that the one or more solvents in a solvent borne resin coating on a material passed through said oven is evaporated to form an oven atmosphere comprised of inert gas and one or more evaporated solvent vapor which atmosphere is removed from said oven, the improvement comprising:

(a) sensing the temperature of the oven atmosphere;

(b) determining the highest dew point of the solvent vapors in the oven atmosphere;

(c) establishing a predetermined dew point below said oven temperature and establishing a predetermined difference value;

(d) subtracting said highest dew point from said predetermined dew point to determine the actual difference therebetween; and

(e) comparing said actual difference and said predetermined difference and varying the rate of removing solvent vapor in response to said comparison to maintain said actual difference at a value greater than said predetermined difference and said predetermined degree of saturation without condensation of said solvent vapors.

4,337,583

APPARATUS AND METHOD FOR DRYING A SUBSTANCE

Kenneth R. Harris, Rte. 8, Box 551, Rapid City, S. Dak. 57701

Filed May 14, 1981, Ser. No. 263,422
Int. Cl.[3] F26B 3/06, 17/20
U.S. Cl. 34—33 8 Claims

1. A method for drying a wet substance, said method comprising the steps of:

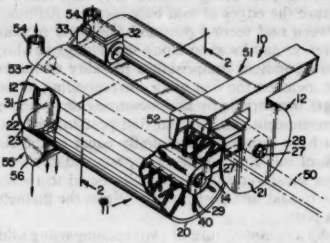
a. moving said wet substance into side by side first and second housings with an elongated aperture therebetween for providing communication of said substance between said housings;

b. imparting motion to said wet substance in each housing;

c. causing said wet substance from one of said first and second connected housings to impact said wet substance from the other of said first and second connected housings at said aperture thereby pulverizing said substance;

d. passing dry gas through said substance to dry said substance;

e. exhaustng said gas from said housings; and



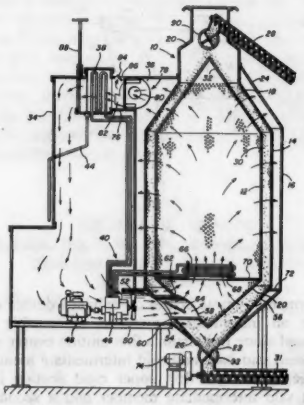
f. directing said dry, pulverized substance from said housings.

4,337,584

HEAT PUMP GRAIN DRYER

Lawrence D. Johnson, R.R. 1, Glenburn, N. Dak. 58740

Filed Sep. 5, 1980, Ser. No. 184,335
Int. Cl.[3] F26B 17/14
U.S. Cl. 34—65 8 Claims



1. A grain dryer including means defining a gravity flow path for granular material to be dried and laterally through which drying air may be passed, said flow path including inlet and outlet end portions, supply means for supplying granular material to said inlet end portion and discharge means for discharging granular material from said outlet end portions, air passage means including means for passing heated drying air laterally through the inlet end portion and cooled drying air laterally through said outlet end portion, said air passage means defining a substantially closed loop circuit and means for pumping air through said circuit, said air passage means including heating means for heating the drying air immediately prior to its passage laterally through said inlet end portion and cooling means for cooling and dehumidifying said drying air after its passage laterally through said inlet end portion and prior to its passage laterally through said outlet end portion, said dryer including a pair of inner and outer loosely telescoped and perforated tubular members including upper and lower ends and defining a generally annular area therebetween comprising said gravity flow path, the upper and lower ends of said inner tubular member being closed, an outer shell at least substantially enclosing said outer tubular member, an outer

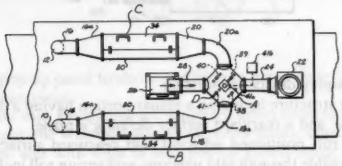
partition extending about said outer tubular member between the latter and said shell intermediate the upper and lower ends of said outer tubular member, an inner partition in said inner tubular member extending thereacross and having an opening formed therein, said heating means comprising heat exchange means disposed across said opening, said air passage means including the area between said outer tubular member and said shell above and below said outer partition, said air passage means including duct means for ducting air from the upper portion of the last-mentioned area above said outer partition to the lower portion of said last-mentioned area below said outer partition, said cooling means being dispose in said duct means.

4,337,585

HEAT RECOVERY AND AIR PREHEATING APPARATUS FOR TEXTILE DRYER OVENS

William H. Hebrank, 14 Hermitage Rd., Greenville, S.C. 29615

Filed Jul. 26, 1979, Ser. No. 60,974
Int. Cl.³ F28D *17/00*; F26B *19/00*
U.S. Cl. 34—86 **6 Claims**



1. Heat recovery and replacement air preheating apparatus for use in textile heat treatment machinery comprising:

a dryer oven heated by a suitable heat means having a dryer chamber through which textile fabric is passed for treatment;

a first port carried by said dryer oven communicating directly with an interior of said dryer chamber;

a second port carried by said dryer oven communicating directly with said interior of said dryer chamber spaced from said first port;

duct means connected to said first and second ports;

exhaust means for delivering a flow of hot exhaust gases from said dryer oven;

air flow means for delivering a flow of replacement air to said dryer oven in a direction reverse to that of said flow of exhaust gases;

valve manifold means connected in said duct means for selectively controlling said flow of replacement air into said dryer oven and said flow of gases out of said oven alternately through said first and second ports;

first thermal storage means connected in said duct means in series flow relationship with said first port and said valve manifold means for recovering and storing heat from said exhaust gases;

second thermal storage means connected in said duct means in series flow relationship with said second port and said valve manifold means for recovering and storing heat from said exhaust gases;

valve means included in said valve manifold means having a first position in which said flow of exhaust gases passes through said first port and first thermal storage means and said flow of replacement air simultaneously passes through said second thermal storage means and said second port;

said valve means having a second position in which said flow of exhaust gases passes outwardly through said second port and second heat storage means and said flow of replacement air simultaneously passes inwardly through said first heat storage means and first port; and

means for alternating said valve means between said first and second positions;

whereby said reverse flow of replacement air cycles between said first and second heat storage means after each has been previously heated by said flow of exhaust gases thereby purging and returning heat exhausted from said dryer in the form of preheated replacement air in a manner which maintains said apparatus substantially free and clean of lint from said textile fabric and in which a substantial amount of exhaust heat is prevented from reaching the outside environment and which maintains said apparatus at a reduced temperature.

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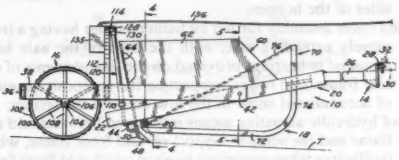
APPARATUS FOR THE HANDLING AND CONDITIONING OF SNOW

Joseph Buono, 9797 Bitten Dr., P.O. Box 189, Brighton, Mich. 48116

Filed Mar. 25, 1981, Ser. No. 247,493
Int. Cl.³ E01H *4/00*
U.S. Cl. 37—222 **9 Claims**



1. An apparatus for the handling and conditioning of snow and adapted to be pulled by a tractor or other power source comprising:

a tongue and hitch assembly at the forward end of the apparatus and located on the centerline thereof;

a roller assembly at the rearward end of the apparatus; and

a scraper and snow collector assembly intermediate the forward and rearward ends;

said scraper and snow collector assembly having a raised position and a lowered position including a front elongated frame of U-shaped configuration when viewed from the top and having a pair of laterally spaced apart tubular side members having the forward ends thereof connected by a laterally extending tubular front cross brace;

said roller assembly including a rear elongated frame having a pair of laterally spaced apart tubular side elements having the rearward ends thereof connected by a laterally extending tubular back cross support;

the side elements of said rear frame being located outboard of the side members of said front frame;

first pivot means connecting the forward ends of said side elements to intermediate portions of said side members;

a scraper blade support mounting element extending parallel to said front cross brace at the back of said front frame and abutting and secured to the bottom of said tubular side members at the rear end portions thereof;

a laterally extending scraper blade secured to said scraper blade mounting element and located beneath said front elongated frame, said blade comprising a plurality of downwardly inclined teeth for scraping snow or dirt from the terrain when the scraper and snow collector assembly is in said lowered position;

said scraper and snow collector assembly further including a hopper open at the top and at the bottom and supported by said front frame, said hopper extending forwardly from said scraper blade towards said front cross brace to accumulate and collect snow scraped from the terrain by said scraper blade;

said hopper including a pair of solid side walls, one side wall being secured and extending upwardly from each of the side members of said front frame, said hopper further including a transversely extending screen at the back of said hopper, said screen being located between said solid side walls and extending vertically upwardly from said scraper support element, said screen permitting snow in

said hopper to sift through the openings provided therein to redeposit quantities of accumulated snow in low areas of the terrain as the apparatus moves forwardly;

said hopper further including a pair of generally vertical floating side panels on the inboard sides of said side members, each side panel having a runner portion along the lower edge thereof adapted to engage the terrain, the rearward end of each side panel being loosely connected to the corresponding tubular side member adjacent said scraper blade;

guide means spaced from each tubular side member and secured to the front cross brace, each guide means extending rearwardly, the front end portion of each side panel being received in the space between the corresponding side member and guide means whereby each side panel will move vertically about the loosely connected end as a result of the runner portion moving along the terrain;

said side panels being generally solid and preventing the snow scraped by said scraper blade from escaping out the sides of the hopper;

said roller assembly further including a roller having a transversely extending axle, with the ends of the axle being mounted in bearings provided on the side elements of said rear frame, said roller compacting the redeposit quantities of accumulated snow in the low areas of the terrain;

and hydraulic actuating means interposed between said rear frame and the scraper support on said front frame, which is effective when energized to pivot or tilt said front frame about said pivot means so that said scraper blade can be raised or lowered with respect to the terrain;

said tongue and hitch assembly including an elongated tongue extending forwardly from and secured to said front cross brace.

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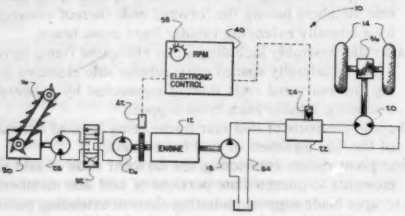
VEHICLE POWER CONTROL SYSTEM

Glen T. Presley, 403 W. Stocker, Angola, Ind. 46703

Filed Apr. 14, 1980, Ser. No. 139,864

Int. Cl.³ E02F *5/06*

U.S. Cl. 37—83 **7 Claims**



1. A trencher control system which varies the vehicle drive speed so as to maintain a preset torque on the digging chain as the digging conditions vary, comprising:

a prime mover;

a drive means connecting the prime mover to the digging chain;

a pump means driven by the prime mover;

a vehicle drive motor connected to the drive wheels of the trencher, said motor being driven by said pump;

RPM sensing means on the prime mover;

a servo-controlled valve means between the pump means and the vehicle drive motor which varies the amount of flow from the pump means to the drive motor; and

an electronic control means which controls the servo of the valve means, the control means receives a signal from the RPM sensing means and compares the signal with an adjustable reference, if the signal received is less than the reference, the control means signals the servo to decrease the flow to the vehicle drive motor, if the signal is greater than the reference, the control means signals the servo to increase the flow to the drive motor and further load the prime mover, whereby the control means maintains the prime mover at its peak torque output regardless of changes in load.

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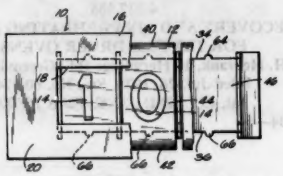
DIGITAL SPRING ROLL DISPLAY DEVICE

Robert C. Clapper, Racine, Wis., assignor to DCI Marketing, Milwaukee, Wis.

Filed Jul. 2, 1981, Ser. No. 279,702

Int. Cl.³ G09F *3/18*

U.S. Cl. 40—10 R **8 Claims**



1. A display device comprising

a support structure including a planar portion having a display window and a rearward surface defining a plane,

a spring roll positioned adjacent said rearward surface and being visible through said window, said spring roll including display characters along its length and comprising a thin strip of material having the property of tending to form coils at its opposite ends,

means for supporting said spring roll adjacent said plane defined by said rearward surface of said planar portion, said means for supporting including a planar member having a planar forward surface positioned closely adjacent but rearwardly of said rearward surface, said planar member having spaced parallel edges, one of said curled opposite ends being supported rearwardly of one of said edges and the other of said curled opposite ends being supported rearwardly of the other of said edges, and

means for preventing movement of the ends of said spring roll past said edges of said planar forward surface, said means for preventing movement including apertures formed in the ends of said spring roll and including a first pin joined to said one edge and projecting away from said one edge and a second pin joined to said other edge and projecting away from said other edge, one of said apertures in one end of said spring being adapted to slip over said first pin as said spring roll is translated in one direction until its end having the aperture is substantially uncoiled, and the other of said apertures in the opposite end of said spring roll being adapted to slip over said second pin as said spring roll is translated in a direction opposite to said one direction until said opposite end is substantially uncoiled.

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METHOD OF MAKING HINGED POP-UP ITEMS

John K. Volkert, Northfield; Ib Penick, ProspectHeights, and Robert B. Volkert, Wilmette, all of Ill., assignors to Compak Systems, Inc., Northfield, Ill.

Filed Jul. 2, 1980, Ser. No. 165,264

Int. Cl.³ G09F *1/10*

U.S. Cl. 40—124.1 **13 Claims**

1. A method of making an item of the character described comprising

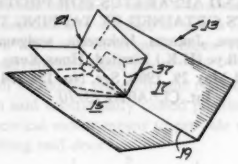
forming a blank from sheet material which blank includes a pair of basepieces and a pair of pop-up panels, at least one of which pop-up panels is originally connected along a straight line to one of said basepieces,

applying an adhesive pattern to said sheet material blank,

folding said sheet material blank so that said pop-up panels are superimposed upon the portion of said blank constituting said basepieces and subsequently folding said blank along a straight line to bring said basepieces into superimposed position with said pop-up panels sandwiched therebetween,

whereby a minor region of each of said pop-up panels becomes respectively adhesively attached to one of said basepieces, and

cutting one common edge of at least one of said basepieces and said one pop-up panel following said adhesive attachment to eliminate said original connection between said one pop-up panel and said one basepiece so as to free said edge of said



one pop-up panel to allow said edge to move away from said one basepiece,

whereby said basepieces are hingedly interconnected along a straight line with said pop-up elements sandwiched therebetween and with each of said pop-up panels being pivotally attached to one of said basepieces generally at an angle of between about 15° and about 70° to said line of hinged interconnection so that the pivoting of said basepieces about said line of hinged interconnection to an open position causes said pop-up panels to rise up out of the plane of each of said basepieces with said edge of said one pop-up panel moving away from said one basepiece edge.

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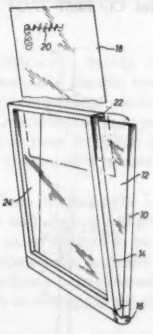
REFLECTIVE DEVICE FOR CARRYING VARIABLE INFORMATION FOR EXAMPLE FOR ADVERTISING PURPOSES

Harold Jackson, Flat 5, 123 Gloucester Pl., London W. 1, England

Filed Sep. 18, 1980, Ser. No. 188,593
Int. Cl.³ G09F *19/00*
U.S. Cl. 40—615 **13 Claims**



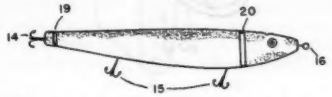
1. A reflecting device for the display of information which includes a substantially flat layer of highly reflecting material placed over a backing member and over which is laid a single flexible sheet of transparent or translucent synthetic plastics material having the information printed thereon, the flat layer, the backing member, and the sheet all being held together by a frame carrying a pane of substantially rigid transparent material having parallel, flat front and rear surfaces, said frame being constructed in such a manner that it can readily be opened for removal and replacement of the sheet, whereby a person's mirror image is viewable in the flat layer through the pane and sheet while simultaneously viewing the information printed on the sheet.

4,337,591

FISHING LURE SYSTEM

Harold A. Gell, 13720 Lockdale Rd., Silver Spring, Md. 20906, and Daniel P. Olszewski, 124 Mars Ct., Indialantic, Fla. 32903

Filed Apr. 24, 1980, Ser. No. 143,329
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.09 **2 Claims**



1. A fishing lure system, comprising:

a central body section including hook and leader connection means and means for receiving a calibrated ballast weight;

a plurality of calibrated ballast weights;

a plurality of pairs of bait simulating patterns;

left and right transparent body halves adapted to encompass said center body section, a selected one of said calibrated ballast weights, and a selected pair of said pairs of bait duplicating patterns; and a band to secure said center body section, said selected ballast weight, said selected pair of bait duplicating patterns and said left and right body halves together whereby said assembly may be disassembled and reassembled utilizing different ones of said calibrated weights and said bait duplicating patterns, said band including projection means for interacting with the water as the lure is retrieved to impart motion to the lure.

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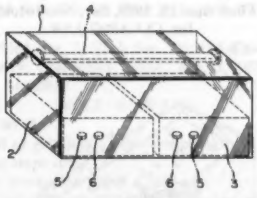
METHOD OF CONTROLLING COCKROACHES

Tokuichiro Hasegawa, Nagoya, Japan, assignor to Takashi Kawai, Hajima, Japan, a part interest

Continuation of Ser. No. 99,086, Nov. 30, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,710
Claims priority, application Japan, Oct. 24, 1978, 53-130799
Int. Cl.³ A01M *1/04*
U.S. Cl. 43—113 **6 Claims**



1. Method of controlling cockroaches, comprising the step of irradiating said cockroaches with discontinuous ultraviolet rays, said irradiating being alternately on and off for 15 minutes each, for a total time of from 9 to 96 hours, and wherein said ultraviolet rays have wavelengths toward the longer wavelengths in the ultraviolet band and below 291 nm.

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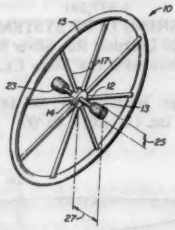
ANATOMICALLY MANIPULABLE ROTATABLE IMPLEMENT

Wesley J. McAllister, 11254 Exeter St., Loma Linda, Calif. 92354

Filed Oct. 19, 1979, Ser. No. 86,552
Int. Cl.³ A63H *1/00*
U.S. Cl. 46—64 **13 Claims**



1. A manually rotatable, anatomically manipulable and supportable implement comprising:

rigid body means defining a radius of gyration R about an axis and being characterized by a center of gravity:

contact means for providing a point of support of said rigid body means on a portion of a user's anatomy, said contact means defining a rolling diameter D centered about said axis; and

means for rigidly spacing said point of support from said center of gravity along said axis to define a distance L;

the overall dimensions of said implement and the dimensional parameters R, L, and D being sized to permit the user to execute maneuvers wherein said contact means undergoes rolling motion along an anatomical portion of said user while the gravitational torque acting about said center of gravity causes a precessional velocity that correlates with said rolling motion to permit said user to maintain some anatomical portion underneath said rolling contact means for significant precessional rotation without bumping against portions of said body means, and wherein said length L divided by the product of said diameter D and the square of said radius of gyration R is in the range of approximately 0.05 to 0.11 reciprocal inches squared to permit said maneuvers to be carried out over a substantial range of kinematic variables.

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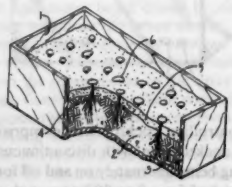
MUSHROOM CASING COMPOSITION AND PROCESS

William A. Hanacek, Salinas; James E. Kahl, Scotts Valley, and Angus B. Mackenzie, Salinas, all of Calif., assignors to Castle & Cooke, Inc., San Francisco, Calif.

Filed Apr. 18, 1980, Ser. No. 141,460
Int. Cl.³ A01G *1/04*
U.S. Cl. 47—1.1 **18 Claims**



1. A process for the preparation of a relatively nutrient-free casing layer useful in the cultivation of mushrooms, comprising the steps of:

(a) providing a mold;

(b) forming an aqueous slurry of a relatively nutrient free casing substrate, a foam forming, hydrophilic, synthetic, organic prepolymer resin, and a buffering agent;

(c) filling said mold with said slurry and curing said slurry to a thermosetting, spongy block;

(d) removing said cured block from said mold; and

(e) pulverizing said cured block.

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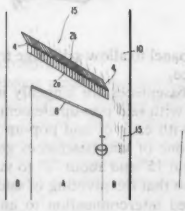
METHOD AND APPARATUS FOR PROTECTING EXTRACTS OBTAINED BY TAPPING TREES

Gerard G. Philippe, Jakarta, Indonesia, assignor to Carlier, Philippe & Melkye (H.K.) Limited, Hong Kong

Filed May 29, 1980, Ser. No. 154,254
Int. Cl.³ A01G *23/10*
U.S. Cl. 47—10 **9 Claims**



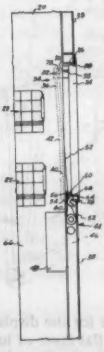
1. A method for protecting from rain water the extracts obtained by tapping trees, wherein a strip of aluminum foil in which aluminum strip folds, pleats or wrinkles are formed, is secured to the trunk of the tree above a tapping slit so as to form a gutter which diverts the rain water flowing down the trunk from the tapping slit.

4,337,596

SLIDING DOOR ACTUATING MECHANISM

Calvin V. Kern, Maumee, and James J. Villano, Toledo, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Nov. 29, 1979, Ser. No. 99,111
Int. Cl.³ E05F *11/38*
U.S. Cl. 49—210 **30 Claims**



1. A system for opening and closing a sliding door in a door frame, said door being moveable forward in a first direction to slide said door open and moveable backward in said first direction to close said door and moveable forward and backward in

a second direction to respectively unlatch and latch said door in said frame, comprising:

opening and closing means for exerting a first force on said door to open said door forward in said first direction and for exerting said first force on said door to close said door backward in said first direction to slide said door to a substantially closed position relative to said door frame, and exerting a second force backward in said second direction to latch said door within said door frame;

said first force and said second force being continuously applied to slide said door backwards in said second direction to close said door and to move said door backward in said second direction to latch said door; said opening and closing means including winch means and electrical motor means mechanically coupled to said winch means;

said system including differential means for allowing compound movement of said door;

said system including switch means responsive to said door being in said substantially closed position for controlling said electrical motor means to provide said second force for latching said door.

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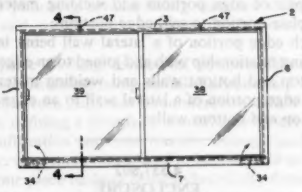
SLIDING WINDOW CONSTRUCTION HAVING PIVOTAL CHARACTERISTIC TO FACILITATE CLEANING BOTH SIDES OF THE WINDOW

Ernest F. Struckmeyer, 1261 S. Mayfair, Daly City, Calif. 94015

Filed Apr. 7, 1980, Ser. No. 138,235

Int. Cl.³ E05F *7/02*

U.S. Cl. 49—256 **4 Claims**



1. A window construction having one or more window panes adapted for normally slidable transverse movement to effect opening and closing of said window panes of each window pane about a vertical axis so as to permit cleaning of both sides of each window pane from the inside of the room in which the window construction is installed, the combination comprising:

(a) a main window frame adapted to be fixed within an opening in a wall to frame said opening and provide support for one or more window panes adapted to be mounted therein;

(b) at least one window pane normally slidably mounted on said main window frame in an elevated position for selective transverse slidable movement in the plane of said main window frame; and

(c) means interposed between said window pane and said main window frame normally supporting said window pane in said elevated position and selectively operable to lower said window pane to a lower position in which said window pane is pivotally suspended in the opening formed by said main window frame whereby said window pane may be pivoted out of the plane of said main window frame to give access to both sides of the window pane.

4,337,598

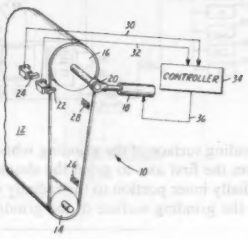
ENDLESS BELT WITH AUTOMATIC STEERING CONTROL

Jerry J. Barth, Red Wing, and Lawrence A. Martin, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 21, 1979, Ser. No. 106,272

Int. Cl.³ B24B *21/18*

U.S. Cl. 51—135 BT **14 Claims**



1. In a grinding machine utilizing an endless coated abrasive belt, a plurality of spaced and aligned rollers for supporting said belt, one of said rollers being movably supported to control the transverse position of the belt with respect to a path about the rollers, drive means for moving said position controlling roller, and sensing means for sensing movement of the belt transverse to its length and for providing a transverse movement signal indicative of the direction of transverse motion to the drive means to cause movement of said position controlling roller such as to impart transverse movement of the belt in a direction opposite to the sensed direction, wherein said sensing means comprises:

at least one permanent magnet comprising a flexible magnet material including domain sized particles supported by a polymeric binder, said magnet being a part of the belt, movable with the belt, and being positioned such that the poles thereof exhibit a given orientation with respect to an edge of the belt,

magnetic field sensing means positioned adjacent the path of the magnet on the belt for responding to a change in the field provided by a said magnet as a result of transverse movement of the belt and for providing said transverse movement signal indicative of the direction of said transverse movement, and

means responsive to said transverse movement signal for controllably energizing said drive means to impart a reverse transverse movement to said belt.

4,337,599

METHOD OF SHOULDER GRINDING

Tsuyoshi Koide, Toyota, and Yasuo Suzuki, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 2, 1980, Ser. No. 136,479

Claims priority, application Japan, Apr. 3, 1979, 54-40550; Apr. 10, 1979, 54-43929

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—289 R **4 Claims**

1. A method of grinding a shoulder portion of a workpiece comprising the steps of:

rotating the workpiece about a first axis;

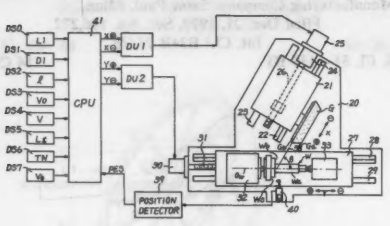
providing a grinding wheel having a grinding surface whose width is smaller than the shoulder portion of the workpiece for use in grinding the shoulder portion;

rotating the grinding wheel about a second axis extending at an acute angle to the first axis;

effecting first relative movement between the rotating grinding wheel and the rotating workpiece to engage the grind-

ing surface of the grinding wheel with the radially inner portion of the shoulder portion; and

effecting second relative movement between the rotating grinding wheel and the rotating workpiece to move the



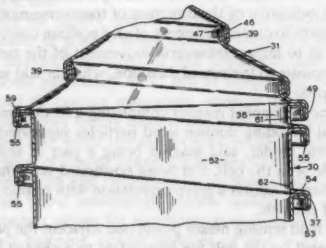
grinding surface of the grinding wheel in a direction away from the first axis to grind the shoulder portion from the radially inner portion to the radially outer portion thereof by the grinding surface of the grinding wheel.

4,337,600

HELICAL STORAGE BIN

Elmer K. Hansen, 801 S. Martha St., Sioux City, Iowa 51106

Filed Apr. 11, 1980, Ser. No. 139,574
Int. Cl.³ E04B *7/00, 1/32*
U.S. Cl. 52—82 **1 Claim**



1. A cylindrical storage bin comprising:

(a) a one piece upright side wall structure formed of a continuous metal ribbon member wound in a closed helical cylindrical shape, and having an upper end and a lower end,

(b) coacting locking means formed on the opposite sides of said ribbon member to continuously and rigidly interlock adjacent sides of the ribbon member in said closed cylindrical shape,

(c) a roof unit for the upper end of said wall structure having an outer peripheral portion,

(d) means for securing said outer peripheral portion to the upper end of the side wall structure,

means for supporting the lower end of the side wall structure on a foundation with the axis of the wall structure extended substantially vertically,

(f) said wall structure including a vertically continuous wall member,

(g) said coacting locking means, at the junction of adjacent sides of said ribbon member, including a pair of annular horizontal flange sections projected in a superposed relation laterally outwardly from the wall member, with one of said flange sections terminating in a female locking hook and the other of said flange sections in a male locking hook, said locking hooks extended vertically of said wall member whereby said coacting locking means forms a continuous reinforcing rib exteriorly of and about the wall member over the full height thereof,

(h) said roof unit formed of a continuous metal ribbon member wound in a closed helical stepped dome shape, and

(i) coacting locking means formed on opposite sides of said roof ribbon member to continuously and rigidly interlock the adjacent sides of the roof ribbon member in the helical dome shape thereof,

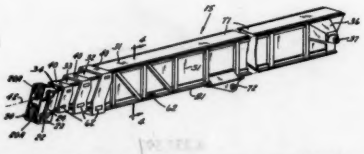
(j) said locking means in interlocked engagement being extended vertically at the junction of adjacent sides of said roof ribbon member to form a riser section in said stepped dome shape roof unit that constitutes a continuous integral support for the roof unit.

4,337,601

HIGH-STRENGTH LIGHT-WEIGHT BOOM SECTION FOR TELESCOPIC CRANE BOOM

Lembit Vaerk, and Narahari Gattu, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Apr. 24, 1980, Ser. No. 143,496
Int. Cl.³ B66C *23/06*
U.S. Cl. 52—118 **16 Claims**



1. A high-strength light-weight hollow boom section for a telescopic crane boom comprising:

a top wall, a bottom wall, and a pair of lateral walls between said top and bottom walls;

each of said walls comprising a pair of spaced apart longitudinally extending edge portions, a relatively thinner imperforate plate portion extending between and joined to said pair of edge portions and welding material joining said plate portion to said edge portions;

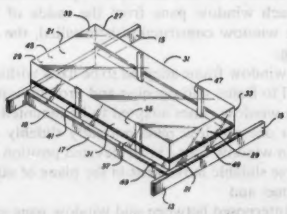
and each edge portion of a lateral wall being in edgewise abutting relationship with and joined to an edge portion of said top and bottom walls and welding material joining each edge portion of a lateral wall to an edge portion of said top and bottom walls.

4,337,602

ENCLOSURE

Richard P. King, 7 Orange Ct., Wappingers Falls, N.Y. 12590

Filed Apr. 18, 1980, Ser. No. 141,633
Int. Cl.³ E06B *6/26*
U.S. Cl. 52—202 **6 Claims**



1. An enclosure for insulating a ceiling entrance from the loss of heat and moisture, said enclosure comprising:

an envelope having a lower edge, said lower edge being secured to said entrance, said envelope being flexible and having a slot through it;

fastening means located in said slot for opening and closing said slot; and

means for supporting said envelope above said ceiling entrance.

4,337,603

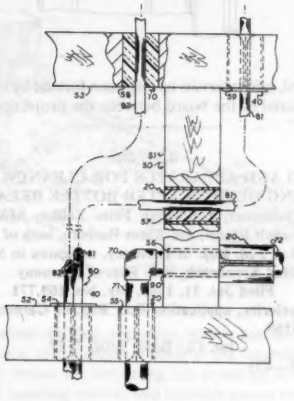
BUSHING, FORMED COMPRESSIBLE INSULATION FOR INSULATING AIR SPACE CREATED BY HOLES

James D. Davidson, 67 Grantour Ct., Pontiac, Mich. 48055

Filed Jun. 21, 1979, Ser. No. 50,825

Int. Cl.³ E04B *5/48*; E04F *17/08*

U.S. Cl. 52—220 **12 Claims**



1. An improved wood building structure such as a dwelling, said building structure having outer periphery walls comprised of wood structural wall components, further comprising electrical and plumbing articles being installed through drilled holes in said components, wherein the improvement comprises:

a one piece bushing formed of compressible expandable thermal insulation being installed around said articles and therebetween said inner circumference wall of said drilled holes, defining a thermally insulated air space; and reducing infiltration and heat transfer through said air space, conserving energy now used to heat or cool said building, said one piece bushing being cylindrically formed of compressible expandable thermal insulation with a slit running the full length of said bushing; and penetrating to the longitudinal center line thereof, said bushing comprising an expansion hole formed on the longitudinal center line; and running the full length of said one piece bushing, said bushing comprising an outer protective flexible surface layer with a slit running full length of said surface layer, coinciding with said slit in said compressible expandable thermal insulation one piece bushing.

4,337,604

BASEBOARD FASTENABLE TO A WALL BY A HOLDER

August Bürgers, Erkelenz-Gerderath, Fed. Rep. of Germany, assignor to Europatent S.A., Luxembourg, Luxembourg

Filed Nov. 30, 1979, Ser. No. 99,174

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853092

Int. Cl.³ E04F *19/04*

U.S. Cl. 52—287 **4 Claims**

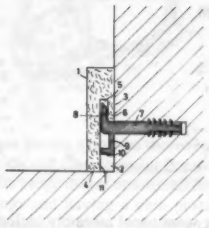
1. A baseboard fastenable to a wall by a holder comprising a baseboard formed with a recess extending in a longitudinal direction of the baseboard and opening towards a wall side and a floor side of the baseboard,

said recess extends upwardly forming a groove-like depression in said baseboard and forming a downward directed rib on the wall side of said baseboard,

a holder comprises a dowel arranged below said rib and perpendicular to the wall side of the baseboard,

said dowel has one end projecting beyond said wall side of said baseboard and being adapted to be fastened in a hole in the wall,

another end of said dowel extends in said recess beneath said rib and in one-piece therewith has an upward bent holding



part engaging behind and contacting said rib as well as a downwardly bent stop part,

said downwardly bent stop part at a rear wall side thereof is set back towards said wall side of said baseboard relative to said holding part at a wall-facing rear side thereof by an amount equal to the thickness of said rib and has an extension which extends in a longitudinal direction of said dowel and extends in a lower region of said recess resting in contact against a rear side of said baseboard.

4,337,605

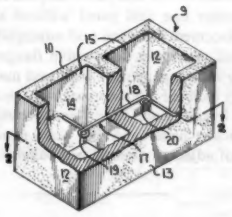
CONCRETE BUILDING BLOCKS WITH LOOPED SECURING RODS FOR MORTARLESS WALL CONSTRUCTION

Arthur L. Tudek, 507 Indiana Ave., Glassport, Pa. 15045

Filed Jul. 18, 1980, Ser. No. 170,067

Int. Cl.³ E04B *2/26*

U.S. Cl. 52—293 **5 Claims**



1. A generally rectangular hollow concrete building block for use in constructing concrete block walls including a concrete footing having a row of uniformly spaced and vertically extending reinforcing bars anchored therein, said block having at least one generally rectangular opening extending vertically therethrough and having flat top, bottom, side and end walls, securing bar retaining and locating means embedded in the interior of said walls and extending transversely into the center of said opening, said bar retaining means having one end fixedly embedded in one wall of opening and extending into the center thereof where it is twisted to form a transversely positioned loop in the center of said opening and its other end fixedly embedded in an adjacent wall, said block being positionable above said reinforcing bars with said opening and said loop alignable therewith and moved downwardly thereover whereby said bars are sleeved through said loops and aligned

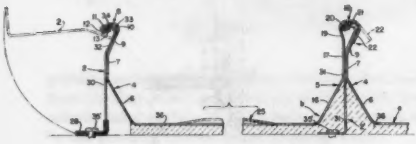
and retained in end to end abutting relation relative to each other in courses without the use of mortar.

4,337,606

METAL PANEL AND MOUNTING STRUCTURE

Hans E. Reusser, Westlake, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Feb. 28, 1980, Ser. No. 125,472
Int. Cl.³ E04D 3/364
U.S. Cl. 52—520 17 Claims



1. A standing seam panel assembly including, a plurality of adjacently connected panels disposed atop supporting means, said panels each having a bottom joined to opposite first and second side walls, said first side wall having an uppermost fixed male seam and said second side wall having an uppermost female seam, said male seam provided with a top portion extending away from its respective said panel first side wall and joined to a nose portion in turn connected to an inwardly facing flange, said nose portion projecting outward from its respective said panel first side wall, said top portion and flange spaced apart to define an inwardly directed groove therebetween, each said male seam including a substantially straight upwardly and inwardly inclined section extending above said first side wall, said female seam provided with an outwardly extending top portion joined to a downwardly directed deformable flange defining an outwardly and downwardly facing cavity therebeneath, said female seam top portion and flange extending away from their respective said panel second side wall, a mounting clip disposed intermediate said first and second panel side walls of said adjacently connected panels and said female seam of one said panel adapted to overlie said male seam of another one said panel without significant relative pivotal displacement between said adjacently disposed panels whereby, said overlying deformable flange may be crimped downwardly into engagement with said male seam upwardly and inwardly inclined section to securely retain said male seam within said female seam cavity and provide a laterally and vertically locked panel assembly seam resulting in the interconnection of adjacent ones of said panels.

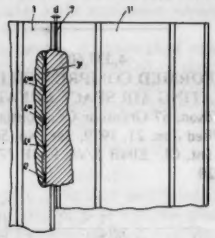
4,337,607

TONGUE AND GROOVE BOARDS WITH SPACERS PERMITTING EXPANSION, AND METHOD OF MAKING THE SAME

Giovanni Boschetti, 6911 Vezio, Switzerland

Filed Mar. 28, 1980, Ser. No. 135,145
Claims priority, application Switzerland, Apr. 23, 1979, 3879/79
Int. Cl.³ E04C 1/30
U.S. Cl. 52—573 2 Claims

1. A tongue and groove board having confronting surfaces when assembled with adjacent said boards, having on the bottom of the groove of each said board a plurality of projections which are spaced apart at their bases in the direction of the length of the board and which are of such low mechanical resistance to compression that an assembly of the boards will expand by compressing said projections rather than by buckling, the interval between bases of the projections being greater than the length of the projections in the direction of the length



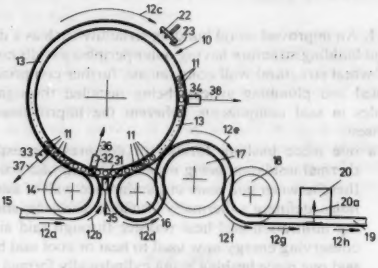
of the board, said intervals having been formed by compression of the material of the board between the projections.

4,337,608

METHOD AND APPARATUS FOR CLEANING BOTTLE FILLING DEVICES AFTER BOTTLE BREAKAGE

Hermann Schlosser, Guldental; Felix Zelder, Münster-Sarmsheim; Rudolf Riedel, and Klaus Borberg, both of Bad Kreuznach, all of Fed. Rep. of Germany, assignors to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,771
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928160
Int. Cl.³ B65B 3/04, 7/28
U.S. Cl. 53—471 22 Claims



1. A method of cleaning bottle-filling device including filling elements defining a liquid conveying path having fine glass splinters and fragments therein inaccessible to an external spray after bottle breakage occurring occasionally in filling stations circulating in bottle filling machines, especially counterpressure filling machines, said method including the steps of:

spraying liquid for a thorough and basic interior cleaning of the liquid conveying path with the filling elements as well as against that filling station in which the bottle breakage occurred, also to free said last mentioned filling station of glass splinters and fragments, while continuing with the filling machine circulation and still during the same circulation during which breakage occurred;

rinsing the pertaining filling device, with the liquid supplied to the bottle to be filled, at least during the first machine circulation following the circulation during which said bottle breakage and liquid spraying took place, a bottle being filled, as a result of said rinsing, during each circulation during which said rinsing occurs;

discharging from said filling machine the bottles filled during said rinsing; and

separating-out the bottle filled during said rinsing of the filling device and the interior cleaning of the liquid conveying path, said bottle being taken from the unbroken

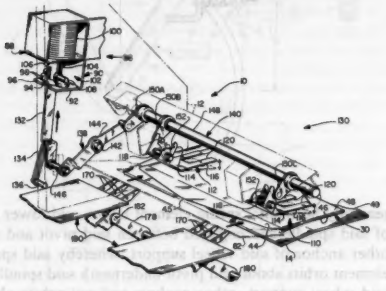
bottles filled at the remaining filling stations where no breakage occurred during the circulation prior to said circulation during which breakage occurred.

4,337,609

ENVELOPE STUFFING APPARATUS

Dean H. Foster, Stratford, and Harold Silverman, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 17, 1980, Ser. No. 188,173
Int. Cl.³ B65B *35/50*
U.S. Cl. 53—569 **8 Claims**



1. In envelope stuffing apparatus which has an enclosure inserting station and includes a deck at the inserting station, and includes means for delivering the envelope in a path of travel to the inserting station, and includes means for opening the envelope, and includes means for inserting an enclosure into the envelope and for removing the envelope from the inserting station, and wherein said opening means includes means for supporting the flap of the envelope above the deck, and said opening means includes first finger means insertable into the envelope for stripping apart from each other the front and back panels of the envelope, an improvement in the envelope opening means, said improvement comprising:

(a) solenoid means operable in response to delivery of the envelope to the inserting station;

(b) second finger means for depressing the envelope toward the deck against the resistance of the flap supporting means; and

(c) linkage means interconnecting the second finger means and solenoid means for normally holding the second finger means out of the path of travel of delivery of said envelope and for lowering the second finger means into engagement with the envelope when the solenoid means is operated, whereby the envelope is depressed toward the deck after the envelope is delivered, and said lowered second finger means depressing said envelope sufficiently to open said envelope enough to permit insertion of said first finger means into said envelope.

4,337,610

ANIMAL CONTROL HALTER

Earl Taylor, 2244 Clinton La., Las Vegas, Nev. 89110

Filed Feb. 5, 1981, Ser. No. 231,762
Int. Cl.³ B68B *1/02*
U.S. Cl. 54—24 **6 Claims**

1. An animal control halter including in combination:

a crown piece connected to at least first and second cheek straps extending therefrom toward the front of the animal's nose;

first and second connecting rings connected, respectively, to the forward ends of said first and second cheek straps;

a chin strap connected between said first and second connecting rings for passing beneath the chin of the animal and having a guide ring therein at an intermediate point;

a curved, rigid nose bar, shaped to generally conform to the shape of the animal's nose, connected at opposite ends thereof to said first and second connecting rings; and

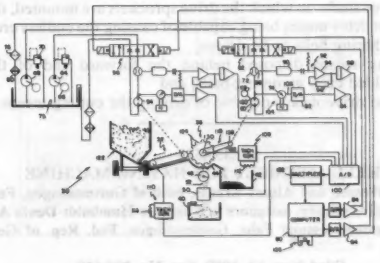
control rope means having a portion thereof passing through the guide ring of said chin strap for connection to a lead rope, said control rope means connected through said first and second rings and having a chin portion for passing underneath the animal's head to apply a clamping action between said chin portion thereof and said nose bar.

4,337,611

AUTOMATIC CONTROL OF A COMBINE THRESHING CYLINDER AND FEEDER CONVEYOR

Michael P. Mailander, Lafayette; Gary W. Krutz, and Larry F. Huggins, both of West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Dec. 10, 1980, Ser. No. 215,056
Int. Cl.³ A01D *41/00*
U.S. Cl. 56—10.2 **13 Claims**



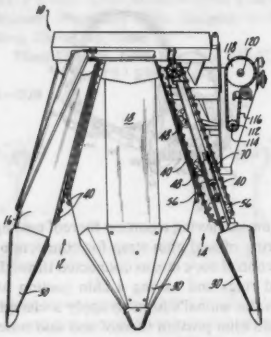
1. An automatic control for a combine which comprises a threshing cylinder and a feeder conveyor, the automatic control comprising means for driving the threshing cylinder, means for sensing the threshing cylinder drive speed, means including means adjacent the threshing cylinder for sensing the moisture content of the materials being threshed for establishing a desired threshing cylinder speed, means for comparing the threshing cylinder drive speed to the desired threshing cylinder speed and for producing a first output signal in response to such comparison, and means for coupling the first output signal to the means for driving the threshing cylinder to control it including controlling the speed of said cylinder by rapidly decreasing said speed as necessary to prevent excessive damage to the materials being threshed.

4,337,612

ROW CROP UNIT

Earl E. Dean, Warren; Marshall L. Quade, Pinckney, both of Mich., and William F. Temple, Albany, Ga., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Dec. 28, 1980, Ser. No. 210,882
Int. Cl.³ A01D 67/00, 45/00
U.S. Cl. 56—98 7 Claims



1. A row crop unit for a crop harvesting machine comprising:

a pair of fore-and-aft extending side by side endless molded crop gathering belts;

a drive sprocket associated with the rear end of each of the crop gathering belts;

a plurality of idler assemblies, each including an idler rotatably mounted on an idler shaft, a forward idler assembly being associated with the forward end of each of the crop gathering belts;

a frame assembly including a cross frame member and a plurality of forwardly extending frame members supporting only the upper ends of the idler shafts whereby said frame assembly does not extend below the idlers, the rear ends of the forwardly extending frame members being connected to the cross frame member;

first drive means associated with the frame and including drive shafts on which the drive sprockets are mounted, the first drive means being capable of causing the endless crop gathering belts to be driven;

cutting means disposed behind the forward end of the molded crop gathering belts; and

second drive means capable of driving the cutting means.

4,337,613

WHEEL ASSEMBLY FOR HAYING MACHINE

Ulrich Wessel, and Albert Krauss, both of Gottmadingen, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG Zweigniederlassung Fahr, Gottmadingen, Fed. Rep. of Germany

Filed Nov. 13, 1980, Ser. No. 206,619
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946404
Int. Cl.³ A01D 79/00
U.S. Cl. 56—370 6 Claims

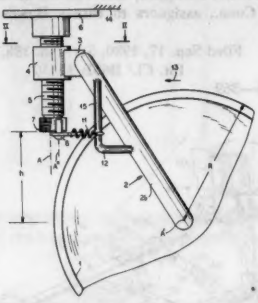
1. In a haying machine having a frame, a wheel assembly comprising:

an upright threaded spindle fixed to said frame, having a lower end, and defining an upright axis;

an anchor fixed to said lower end of said spindle and forming a pivot offset from said upright axis;

a nut threaded on said spindle above said anchor, whereby rotation of said nut on said spindle about said upright axis displaces said nut axially along said spindle;

a rigid wheel support having one end fixed to said nut and another end defining a horizontal axis, said support having another anchor horizontally generally level with said anchor of said spindle, said other anchor and pivot being most closely juxtaposed when said support lies in a predetermined angular position relative to said upright axis corresponding to straight-ahead travel of said haying machine;



a generally horizontal spring element below said lower end of said spindle and engaged between said pivot and said other anchor of said wheel support, whereby said spring element orbits about said pivot underneath said spindle as said wheel support, other anchor, and nut rotate about said upright axis; and

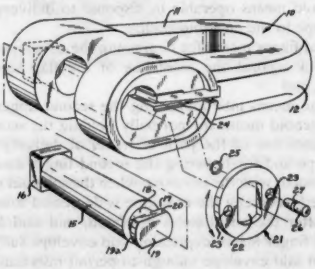
a wheel carried on said other end and rotatable about said horizontal axis.

4,337,614

PIN LOCKING ASSEMBLY

Terry L. Briscoe, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Feb. 19, 1980, Ser. No. 122,593
Int. Cl.³ F16G 15/06
U.S. Cl. 59—86 10 Claims

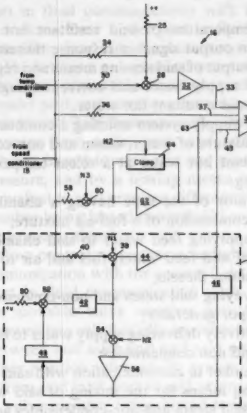


1. A pin locking assembly for a shackle comprising a leg-equipped shackle providing aligned openings in the legs thereof for receipt of a pin, a pin mounted in said openings by axial movement into said openings, a recess in one of said legs communicating with the opening therein and accessible from the outside, a plate positioned in said recess preventing axial movement of said pin, said plate being rotatable in said recess from removable to non-removable positions, lug means extending axially through said plate releasably maintaining said plate in said non-removable position and against rotation, passage means in said member for pryingly removing said lug means, and means operably associated with said assembly for confining said plate against axial movement when said plate is in said non-removable position.

4,337,615
GAS TURBINE FUEL CONTROL SYSTEM

Stephen R. LaCroix, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 21, 1979, Ser. No. 22,532
Int. Cl.³ F02C 9/32
U.S. Cl. 60—39.14 R 29 Claims



1. A system for controlling fuel flow in a gas turbine engine, comprising:

timing means for generating a time signal indicative of the elapsed time from engine start-up;

means for sensing engine speed;

means responsive to said timing means and to the sensed engine speed for scheduling a rate of fuel flow as a function of the time signal;

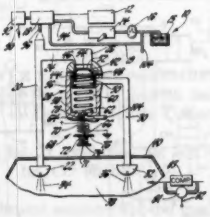
means for producing an error signal when the rate of fuel flow to the gas turbine engine exceeds a predetermined rate for the sensed engine speed; and

means for inhibiting said timing means in response to said error signal to maintain the fuel flow rate to said predetermined schedule corresponding to the sensed engine speed.

4,337,616
FUEL AIR RATIO CONTROLLED FUEL SPLITTER

Noel L. Downing, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 14, 1980, Ser. No. 140,141
Int. Cl.³ F02C 9/04
U.S. Cl. 60—39.28 R 4 Claims

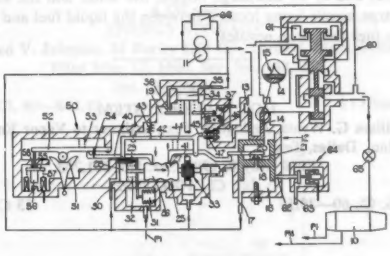


1. A fuel control system for establishing a desired scheduled pilot fuel/air ratio at the pilot nozzle supplying fuel to a gas turbine engine combustor comprising; a pilot fuel nozzle and a main fuel nozzle, fuel metering means for supplying total engine fuel requirements, conduit means for directing the total engine fuel requirements to said pilot nozzle and said main nozzle, said conduit means including an unrestricted conduit directly connected between said fuel metering means and said pilot nozzle to maintain fuel metering means outlet pressure on said pilot fuel nozzle, said pilot fuel nozzle having a small orifice outlet therefrom for mixing reduced quantities of fuel with inlet air to maintain a combustible fuel/air mixture, a branch conduit to said main nozzle, fuel splitter valve means for regulating fuel flow from said fuel metering means into said unrestricted conduit and said branch conduit, means establishing a control signal schedule corresponding to a desired, predetermined pilot fuel/air ratio required to maintain fuel flow from said pilot fuel nozzle to produce a fuel/air mixture therefrom to maintain combustor efficiency during reduced fuel flow rates from said fuel metering means, said fuel splitter valve means including means responsive to said control signal to throttle fuel flow from said fuel metering means to said branch conduit so as to maintain a controlled residual fuel flow in said unrestricted conduit to maintain the scheduled pilot fuel/air ratio at low levels of fuel flow from said metering means thereby to prevent either pilot nozzle fuel richness or pilot nozzle fuel leanness that would otherwise reduce combustor efficiency.

4,337,617
FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Trevor S. Smith, Sutton Coldfield, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 6, 1980, Ser. No. 147,319
Claims priority, application United Kingdom, Jul. 13, 1979, 7924479; Feb. 27, 1980, 8006552
Int. Cl.³ F02C 9/16
U.S. Cl. 60—39.28 R 10 Claims



1. A fuel control system for a gas turbine engine, comprising a variable metering device, selector means for setting a desired thrust of the engine, a first three-dimensional cam movable in response to sensed values of first and second air pressures from the engine compressor, said first cam being profiled as a function of said first and second pressures for a plurality of corresponding sensed values, a second three-dimensional cam movable with said first cam, said second cam being profiled as a function of a plurality of desired fuel flows for corresponding sensed values of said air pressures, first and second cam followers respectively engaging said first and second cam profiles, and a linkage, responsive to the operating positions of said selector means and of said first and second cam followers, for varying the operating position of said metering device.

4,337,618

GAS TURBINE ENGINE FUEL BURNERS

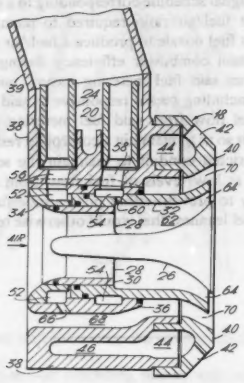
Eric Hughes, Nuneaton, and Donald McKnight, Binley, both of England, assignors to Rolls-Royce Limited, London, England

Filed May 23, 1980, Ser. No. 152,655

Claims priority, application United Kingdom, Jun. 6, 1979, 7919727

Int. Cl.³ F02C 7/22; B05B 7/06

U.S. Cl. 60—39.55 7 Claims



1. A gas turbine engine fuel injector having a liquid fuel supply means, gaseous fuel supply means and water injection means, the liquid fuel supply means comprising a liquid fuel duct, a first manifold having a plurality of discrete outlets, an annular discharge duct which is also arranged to receive a flow of compressed air and a liquid fuel and air discharge nozzle, the gaseous fuel supply means comprising a gaseous fuel duct, a second manifold having a plurality of discrete outlets, forming a gaseous fuel discharge nozzle and the water injection means comprising a water supply duct and a third manifold having a plurality of outlets in communication with a water injection duct also arranged to receive a flow of compressed air, and a water and or air discharge nozzle, the water and the air discharge nozzle being located between the liquid fuel and gaseous fuel discharge nozzles.

4,337,619

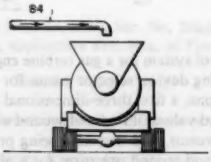
HOT WATER SYSTEM

William G. Wyatt, Arlington, Tex., assignor to Vapor Energy, Inc., Dallas, Tex.

Filed May 8, 1981, Ser. No. 261,703

Int. Cl.³ F02C 7/00

U.S. Cl. 60—39.55 13 Claims



1. A method of producing hot water through combustion of fuel and air and the mixture of water, steam and non-combustibles to provide resultant hot water at a select temperature, said method comprising the steps of:

providing a vapor generator of the type having a chamber for the receipt and combustion of a fuel-air mixture;

supplying feed water to said vapor generator chamber for the conversion of said feed water, fuel and air to steam and non-condensibles therein;

conveying said steam and non-condensibles away from said vapor generator;

delivering supply water to be heated to said steam and non-condensibles in selective flow rates;

mixing of said water to be heated with said steam and non-condensibles and producing resultant hot water therefrom;

sensing the temperature of said resultant hot water and producing an output signal in response thereto; and

detecting the output of said sensing means and regulating the flow of said supply water and correspondingly the temperature of said resultant hot water.

2. A hot water supply system utilizing a combustion of fuel and air and the mixture of water, steam and non-combustibles to provide resultant hot water at a select temperature, said system comprising:

a vapor generator of the type having a chamber for the receipt and combustion of a fuel-air mixture;

a means for supplying feed water to said chamber for the conversion of said feed water, fuel and air to steam and non-condensibles therein;

means for conveying said steam and non-condensibles away from said vapor generator;

means for selectively delivering supply water to be heated to said steam and non-condensibles;

at least one chamber in communication with said conveying and delivering means for the mixing of said water to be heated with said steam and non-condensibles and production of resultant hot water therefrom;

means for sensing the temperature of said resultant hot water and producing an output signal in response thereto; and

control means for detecting the output of said sensing means and controlling said supply water delivery means for regulating the flow of said supply water and correspondingly the temperature of said resultant hot water.

4,337,620

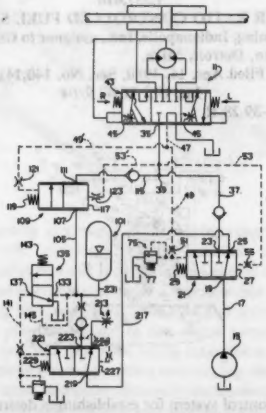
LOAD SENSING HYDRAULIC SYSTEM

Oliver W. Johnson, Chaska, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 15, 1980, Ser. No. 169,002

Int. Cl.³ F15B 1/02; G05D 11/03

U.S. Cl. 60—418 11 Claims



2. A system for controlling the flow of fluid from first and second fluid sources to a priority load circuit and to an auxiliary load circuit means, the priority load circuit including means defining a main, variable flow control orifice, means

providing a pilot pressure signal from upstream of said variable flow control orifice, and means providing a load pressure signal from downstream of said variable flow control orifice, the priority load circuit being normally operable in response to a pressure differential X between said pilot pressure signal and said load pressure signal, said system comprising:

(a) first flow control valve means including an inlet port in fluid communication with the first fluid source, a priority outlet port in fluid communication with the priority load circuit, an excess flow outlet port in fluid communication with the auxiliary load circuit means, a movable valve member movable between one position permitting substantially unrestricted fluid communication from said inlet port to said priority outlet port, and another position permitting substantially unrestricted fluid communication from said inlet port to said excess flow outlet port, and said movable valve member being biased toward said one position by said load signal pressure, and by a biasing means exerting a biasing force equivalent to said pressure differential X, said movable valve member being biased toward said another position by said pilot pressure signal;

(b) second flow control valve means including an inlet port in fluid communication with the second fluid source, a priority outlet port in fluid communication with the priority load circuit, a movable valve member movable between one position permitting substantially unrestricted fluid communication between said inlet port and said priority outlet port, and another position substantially preventing fluid communication from said inlet port to said priority outlet port, said movable valve member being biased toward said one position by said load pressure signal and a biasing means exerting a biasing force equivalent to a pressure differential Y, said movable valve member being biased toward said another position by said pilot pressure signal; and

(c) said pressure differential Y being less than said pressure differential X whereby:

(i) when the fluid delivery of the first fluid source is sufficient to maintain said pressure differential X between said pilot pressure signal and said load pressure signal, the movable valve member of said second flow control valve means is in said another position, and all fluid required by said priority load circuit is supplied by the first fluid source, through said first flow control valve means; and

(ii) when the fluid delivery of the first fluid source is insufficient to maintain the pressure differential X between said pilot pressure signal and said load pressure signal, the pressure differential therebetween is reduced to said pressure differential Y, the movable valve member of said first flow control valve means is in said one position, the entire fluid delivery of the first fluid source flows to the priority load circuit, and the movable valve member of said second flow control valve means is biased away from said another position to permit a sufficient flow of fluid from the second fluid source to the priority load circuit to maintain said pressure differential Y across the main variable flow control orifice.

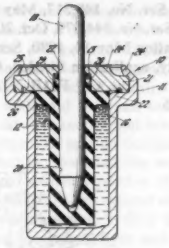
4,337,621

POWER ELEMENT ASSEMBLY

Ernest Lane, Jr., and Raymond E. Seekins, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1980, Ser. No. 170,745
Int. Cl.³ F01B *29/10*
U.S. Cl. 60—527 **3 Claims**

1. In a power element assembly for use in a liquid environment to operate devices such as valves, switches and the like wherein the assembly is of the type having a cup, an elastomeric diaphragm, a flange seal sealingly clamping the diaphragm to the cup so that the diaphragm and cup cooperatively retain a thermally expansible material extending about a central piston pocket in the diaphragm, a piston received in the pocket in the diaphragm and extending through a central opening in the flange seal and displaced outwardly by thermal expansion of the expansible material, and a rigid annular member received about the piston in an annular recess in the flange seal for preventing extrusion of the diaphragm into the opening in the flange seal: the improvement comprising in combination, a sealing neck formed integral with the diaphragm and extending about the piston, the recess in the flange seal having an inner peripheral surface sized so that the recess can fully accommodate said sealing neck, said sealing neck having radially spaced outer and inner peripheral surfaces, said inner peripheral surface having a plurality of axially spaced and radially inwardly projecting annular seal beads, said outer peripheral surface having a concave cross-section prior to assembly, and



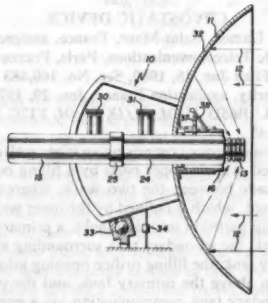
said annular seal beads having a predetermined interference fit with respect to the piston and the end dimension and the depth of concavity of said outer peripheral surface prior to assembly of the piston and diaphragm being determined so that said sealing neck is deformed radially outward midlength thereof and said outer peripheral surface is caused to conform to and sealingly engage with said inner peripheral surface of said recess while said annular seal beads retain their separate identity while being sealingly retained in engagement with the piston by compression of said sealing neck in the recess in the flange seal during assembly of the piston and diaphragm and thereafter under both static and dynamic conditions of the piston.

4,337,622

ENERGY STORAGE

Wilfred V. Johnson, 36 Rocky Hill Rd., Oxford, Mass. 01540

Filed May 12, 1980, Ser. No. 148,758
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—641.13 **11 Claims**



1. Apparatus for storing solar energy comprising:

(a) an optical device for concentrating the sun's rays, to a restricted area,

(b) a motor located at the area and having an element movable in response to changes in temperature,

(c) a cell contacted by the said movable element for storing the energy produced by the element,

(d) a shutter for interrupting the sun's rays to the motor on occasion to allow the motor temperature to drop and cause the element to retract, said shutter being in the form of a tube that is guided for axial movement from a closed position where it is co-extensive and envelops with said motor to an open position in which it is non-coextensive with said motor.

4,337,623

VEHICLE DRIVE SYSTEM

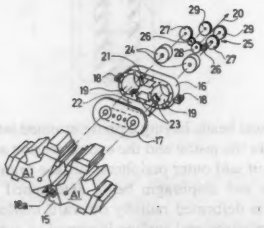
Sven-Olof Kronogård, Karstorpsvägen 31, Lomma, Sweden (S 23400)

Division of Ser. No. 148,217, May 9, 1980, which is a continuation of Ser. No. 844,079, Oct. 20, 1977, abandoned. This application May 14, 1980, Ser. No. 149,760

Claims priority, application Sweden, Oct. 20, 1976, 7611617

Int. Cl.³ F01B *21/02*

U.S. Cl. 60—716 **6 Claims**



1. A vehicle drive system comprising at least two prime movers and a base block communicating said prime movers with an output shaft,

said base block having a housing enclosing two parallel, cylindrical chambers, and provided with external mounting members for mounting the block in a vehicle,

a strengthening wall structure separating said chambers and being defined by part-cylindrical surfaces bordering said chambers,

means for mounting said prime movers directly at said base block, with their shafts aligned with the axes of said chambers, and

gearing means enclosed in said base block, connected to said prime movers and said common output shaft.

4,337,624

CRYOSTATIC DEVICE

Christian H. Hamon, Saint-Maur, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jun. 18, 1980, Ser. No. 160,483

Claims priority, application France, Jun. 29, 1979, 79 16840

Int. Cl.³ B65D *25/04, 25/18, 90/04;* F17C *13/00*

U.S. Cl. 62—45 **10 Claims**

1. A cryostatic device comprising an inner wall and an outer wall connected at their upper parts by a filling orifice, a vacuum being made between the two walls, wherein a tank for cryogenic liquid, which is defined by the inner wall, is divided by a separating partition into two tanks, a primary tank and a secondary tank, the secondary tank surrounding at least a part of the primary tank, the filling orifice opening into the secondary tank from above the primary tank, and the primary tank and the secondary tank communicating via a communicating opening located in the separating partition at a level such that the volume of the primary tank located below said communicating opening is approximately equal to the volume located above said communicating opening in said primary tank, wherein said partition includes a generally horizontally-extending portion disposed directly below said filling orifice and a generally vertically-extending portion extending downward from said horizontally-extending portion, and wherein said inner wall includes:

a first portion extending substantially parallel to the vertically-extending portion of said partition;

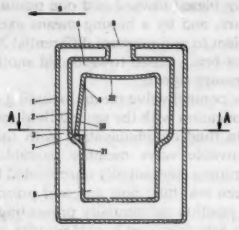
a second portion which tapers from said first portion to join said partition at a vertical location disposed below said communicating opening; and

a third portion defining the bottom of said primary tank.

10. A cryostatic device comprising:

inner and outer walls defining an evacuated space therebetween, said inner wall further defining a tank for cryogenic liquid;

a separating partition dividing said tank into primary and



secondary chambers, the secondary chamber surrounding at least part of said primary chamber;

a cryogenic liquid filling orifice extending through said inner and outer walls proximate their uppermost parts to permit said secondary chamber to receive cryogenic liquid directly from said filling orifice; and

means for maintaining cryogenic liquid in said primary chamber at at least a predetermined level with cryogenic liquid from said secondary chamber, said means comprising a communicating orifice defined through said separating partition at said predetermined level in said primary tank;

wherein said separating partition has an upper portion having a concave configuration forming a dish positioned directly below said filling orifice.

4,337,625

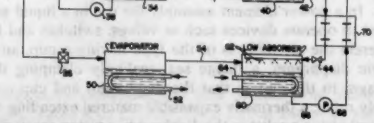
WASTE HEAT DRIVEN ABSORPTION REFRIGERATION PROCESS AND SYSTEM

William H. Wilkinson, Columbus, Ohio, assignor to Battelle Development Corp., Columbus, Ohio

Filed Mar. 2, 1981, Ser. No. 239,256

Int. Cl.³ F25B *7/00, 15/00, 27/02*

U.S. Cl. 62—79 **25 Claims**



1. A process for producing refrigeration from a sensible

waste heat source using a compound absorption refrigeration cycle with a refrigerant and an absorbent compatible with said refrigerant, said absorbent having a negligible volatility at the temperatures encountered during operation, comprising the steps of:

(a) supplying heat from said waste heat source and utilizing a portion of it to desorb as relatively high pressure vapor at least a portion of said refrigerant from a first working solution of said absorbent and said refrigerant,

(b) condensing at least a portion of the refrigerant vapor from step (a) at said relatively high pressure,

(c) passing the resultant liquid refrigerant to an area of relatively lower pressure where at least a portion of it is expanded and evaporated, drawing heat from an external space and producing a refrigerating effect,

(d) contacting the refrigerant vapor formed in step (c) with a second working solution of said absorbent and refrigerant to absorb at least a portion of said refrigerant vapor into solution,

(e) passing the resultant solution to an area of intermediate pressure and supplying another portion of heat from said waste heat source from step (a) to desorb as vapor at least a portion of the refrigerant from step (d), and returning said second working solution to step (d),

(f) contacting the refrigerant vapor from step (e) with said first working solution of said absorbent and refrigerant from step (a) to absorb at least a portion of said refrigerant vapor into solution, and

(g) returning the resultant solution to step (a).

4,337,626

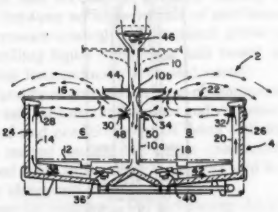
WELL TYPE REFRIGERATED CASE WITH DEFROST AIR INTAKE AND COLLIDING BAND AIR DEFROST

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 145,859, May 1, 1980, which is a continuation-in-part of Ser. No. 107,261, Dec. 26, 1979, Ser. No. 76,669, Sep. 18, 1979, Ser. No. 60,549, Jul. 25, 1979, and Ser. No. 11,804, Feb. 14, 1979. This application Jan. 21, 1981, Ser. No. 226,768

Int. Cl.³ A47F *3/04*

U.S. Cl. 62—82 **16 Claims**



9. A refrigerated display case, comprising:

an open top cabinet containing a well type region;

defrost conduit means extending upwardly in said well type region between opposite sides of said cabinet to divide said well type region into separate first and second open top product display spaces;

first air conduit means extending around said first display space within said cabinet, said first air conduit means containing first refrigeration coil means;

first air outlet means and first air inlet means of said first air conduit means located on opposite sides of said first display space;

second air conduit means extending around said second display space within said cabinet, said second air conduit means containing second refrigeration means;

second air outlet means and second air inlet means of said second air conduit means located on opposite sides of said second display space;

wherein said first and second inlet means are located in said column and said defrost conduit means comprises an upwardly extending part of said first and second conduits;

main air circulating means for circulating air through said first and second conduit means, respectively, and across the open tops of said first and second display spaces between the respective outlet means and inlet means in the form of respective air curtains during a refrigeration cycle;

further air circulating means located in said defrost conduit means above said respective first and second inlet means; and

defrost control means for energizing said further air circulating means at the start of a defrost cycle to draw ambient air from above the refrigerated display case into said defrost conduit means, first and second portions of said ambient air being directed out of said first and second inlet means to collide with said first and second air curtains flowing toward said first and second inlet means, respectively, at least portions of said air curtains being thereby reversed and caused to flow over the top of and outside the display case, and a further portion of said ambient air being drawn into said first and second conduit means by said main air circulating means to flow through said first and second conduit means and over said first and second refrigeration coil means.

4,337,627

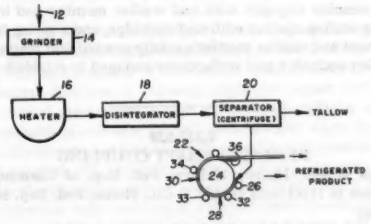
APPARATUS FOR REFRIGERATING PROTEIN MATERIALS

Eldon N. Roth, 99 Madera Ct., San Ramon, Calif. 94583

Division of Ser. No. 103,498, Dec. 14, 1979, Pat. No. 4,294,860, which is a continuation-in-part of Ser. No. 970,579, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 849,166, Nov. 7, 1977, abandoned. This application Jun. 8, 1981, Ser. No. 271,546

Int. Cl.³ A23G *9/00*

U.S. Cl. 62—346 **6 Claims**



1. Apparatus for rapidly reducing the temperature of a viscous paste substance, said apparatus comprising

a first drum having a cylindrical exterior surface formed of thermally conductive heat transfer material,

means for refrigerating said heat transfer surface,

means for rotatively driving said first drum,

means for introducing a sheet of the viscous paste substance onto the surface of said first drum and for urging said viscous paste sheet into intimate heat exchange contact with said heat exchange surface of said first drum,

a second drum having a cylindrical exterior surface formed of thermally conductive heat exchange material,

means for refrigerating said heat exchange surface of said second drum,

means for rotatively driving said second drum,

transfer means for removing said sheet of viscous paste substance from said first drum and applying it to the heat exchange surface of said second drum with the originally

exposed surface of the sheet adjacent said heat exchange surface of said second drum, and

means for removing said sheet of viscous paste substance from said second drum.

4,337,628

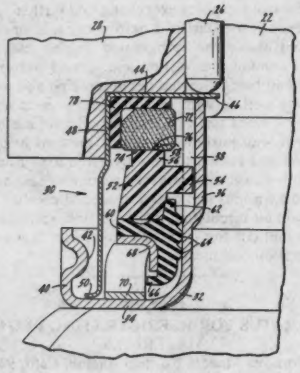
UNIVERSAL JOINT WITH UNITARY FACE SEAL AND RETAINER ASSEMBLY

C. Roger Greene, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 20, 1980, Ser. No. 179,928

Int. Cl.³ F16D 3/26

U.S. Cl. 464—131 9 Claims



1. In a universal joint including a trunnion journalled by bearing elements in a bearing block; the improvement comprising a unitary assembly including a cartridge secured to said trunnion, a shroud axially spaced from said cartridge and secured to said bearing block, a washer member in driven relationship with said cartridge and defining a first axially facing sealing surface, a mating face member engaged with said shroud and defining a second axially facing sealing surface, a boot member engaged with said washer member and in axial sliding sealing contact with said cartridge, and a spring biasing said boot and washer members axially toward said mating face member such that said surfaces are engaged to establish a face seal.

4,337,629

RESILIENT SHAFT COUPLING

Jürgen Walter, Haltern-Hullern, Fed. Rep. of Germany, assignor to Hackforth GmbH & Co., Herne, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,304

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810885

Int. Cl.³ F16D 3/80, 3/56

U.S. Cl. 464—24 2 Claims

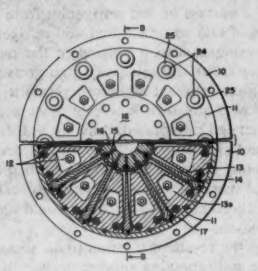
1. A resilient shaft coupling having damping by liquid displacement, said coupling comprising:

an inner driving member having recesses located in the generated surface thereof and extending in the axial direction;

an outer driven member having liquid-filled chambers bounded by filling elements;

a plurality of resilient elements connected to said outer coupling member, extending radially of the axis of rotation of said coupling, and disposed between said inner and outer members, the radially inner free ends of said resilient elements being received in said axial recesses of said inner member, each of said resilient elements extending between some of said liquid-filled chambers in such a way that liquid responds to relative movement between said inner and outer members by being displaced from one of said chambers to an adjacent chamber bounded by one of said resilient elements;

two journal pins respectively provided on each of said resilient elements on those lateral end faces thereof at that end of said resilient element opposite said free end, said outer



member having corresponding bores for receiving respective journal pins therein; and

bearing sleeves respectively interposed between said journal pins and said corresponding bores in said outer member, at least one of said two journal pins of each resilient element being directly connected with said outer driven member in such a way as to rotate positively therewith.

4,337,630

EXTERNALLY HELD CYLINDRICAL EXPANDER FOR TUBULAR WARES

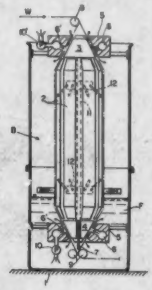
Christian Strahm, Küsnacht, Switzerland, assignor to Lindauer Dornier Gesellschaft mbH., Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,368

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935374

Int. Cl.³ D06B 23/04

U.S. Cl. 68—13 R 4 Claims



1. In an externally held cylindrical expander for tubular ware having a central support for radially adjustable expansible props and segment-shaped guide elements borne by the props, in particular for treating the tubular ware with liquid treatment substances, a longitudinally tapered body mounted to each end of the central support as entry and exit parts, and the guide elements extend in the longitudinal direction of the expander between the two bodies,

the improvement comprising bearing means conforming to the shape of and surrounding at least in part at least the lower tapered body and including discharge apertures distributed on the interior periphery of said tapered body, said discharge apertures issuing into a gap between said bearing means and said body, whereby a fluid issuing from

said discharge apertures into said gap supports said expander.

4,337,631

APPARATUS FOR TREATMENT OF MATERIALS

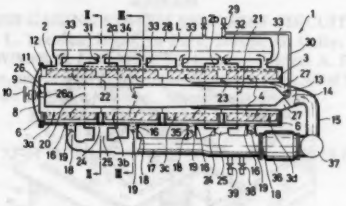
Akio Fukuroi, Uozu, and Isao Sugimoto, Aichi, both of Japan, assignors to Yoshida Kogyo K.K. and Nippon Dyeing Mfg. Co., both of Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,389

Claims priority, application Japan, Mar. 31, 1980, 55-41421[U]

Int. Cl.³ D06B 5/18

U.S. Cl. 68—189 5 Claims



1. An apparatus for the treatment of materials with treatment liquid, comprising:

(a) a horizontally extending elongate cylindrical vessel of generally circular cross section for containing the treatment liquid;

(b) a plurality of perforated hollow beams connected end to end and supported concentrically within said vessel for supporting on and around said beams the materials to be treated;

(c) said vessel having an inlet at its one end for introducing the treatment liquid into said vessel, a plurality of first outlets at its bottom for discharging a portion of the treatment liquid out of said vessel, and at least one second outlet at its top for discharging the remaining portion of the treatment liquid out of said vessel, each of said first outlets being disposed substantially centrally of one of said beams, said second outlet being radially aligned with a joint between an adjacent pair of said beams;

(d) a pressure-control tank disposed above said vessel for controlling liquid pressure in said vessel, said tank coextending longitudinally with said vessel;

(e) a plurality of connection pipes communicating at one end with said tank and at the other end with said vessel, at least one of said connection pipes being radially aligned with said second outlet, the other connection pipes being spaced apart from adjacent joints of said beams longitudinally along said vessel; and

(f) means for supplying and circulating the treatment liquid through said vessel and said tank.

4,337,632

LEAF SPRING STRESS PEENING METHOD AND APPARATUS

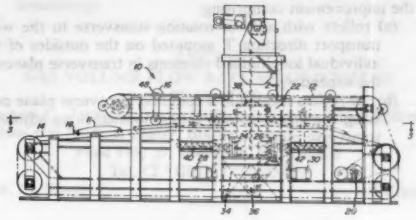
Gerold Lienert, Georgetown, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 12, 1980, Ser. No. 158,732

Int. Cl.³ B24C 1/10

U.S. Cl. 72—53 7 Claims

1. Apparatus for stress peening leaf springs comprising a conveyor including means for supporting and transporting a plurality of leaf springs thereon, means for deflecting and stressing each leaf spring as each leaf spring traverses a perdetermined area, means located in said predetermined area for shot peening the tension side of the deflected spring, a second conveyor transporting a plurality of said means for deflecting and stressing said leaf springs, and means for interlocking the movement of said second conveyor with said conveyor supporting and transporting said leaf springs to provide said deflection as said leaf springs traverse said predetermined area.



4,337,633

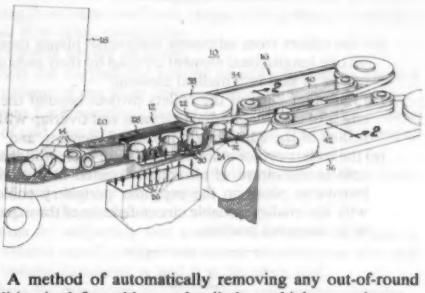
CYLINDER HANDLING DEVICE

Harold W. Logue, North Olmsted, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,609

Int. Cl.³ B21D 3/00

U.S. Cl. 72—94 8 Claims



1. A method of automatically removing any out-of-round condition in deformable metal cylinders which comprises:

(a) feeding a plurality of deformable metal cylinders in a horizontal direction to moving alignment means including a vertical gas column which orients each cylinder with the cylindrical axis in a vertical direction and aligns said vertically oriented cylinders in a row while being rotated, and

(b) gripping the vertically aligned rotating cylinders successively between a pair of spaced apart horizontally disposed conveyor belts traveling at different linear speeds with sufficient mechanical force to rotate said cylinders and remove any out-of-round condition found while said cylinders are being transported.

4,337,634

EXTERNALLY HELD CYLINDRICAL EXPANDER FOR TUBULAR WARES

Werner Strudel, Friedrichshafen, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH., Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,636

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949876

Int. Cl.³ B21B 17/00, 25/02; B29D 7/24

U.S. Cl. 72—113 4 Claims

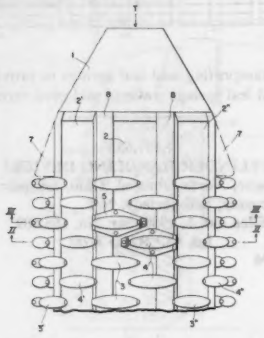
1. In an externally held cylindrical expander for tubular ware with a central support for radially adjustable, spreading rest means and sector-shaped longitudinal elements borne by said rest means, in particular for the treatment of the tubular

ware with liquid treatment means, the longitudinal elements extending between bodies tapering in the longitudinal direction, mounted between the ends of the support, and acting as entry and exit means,

the improvement comprising:

(a) rollers with axes of rotation transverse to the ware transport direction T mounted on the outsides of the individual longitudinal elements in transverse planes of the expander,

(b) the rollers located in a common transverse plane covering the gaps between rollers located in an adjoining transverse plane,



(c) the rollers from adjoining transverse planes mounted on one longitudinal element overlap by their ends at the center of said longitudinal element,

(d) the other ends of the rollers project beyond the side edges of said longitudinal element and overlap with the rollers of the adjoining longitudinal element, and

(e) the rollers evince a convex profile of such kind that the convex curvature of all rollers located in a common transverse plane on the expander periphery coincides with the smallest settable circumference of the expander in its unspread position.

4,337,635

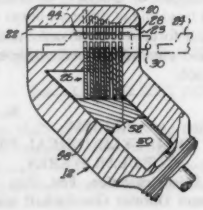
COMPRESSION TOOL

William C. Martin, and Stephen V. Hoydic, Jr., both of Fairview, Pa., assignors to Teledyne Penn-Union, Edinboro, Pa.

Filed Jul. 3, 1980, Ser. No. 165,774

Int. Cl.³ B21D *7/06, 37/10*

U.S. Cl. 72—410 **22 Claims**



1. A compression tool for compressing a generally tubular workpiece, comprising: a tool head having a through opening, a plurality of generally parallel, spaced apart movable compressing members carried by said tool head, a stationary compression surface carried by said tool head and opposingly facing said plurality of movable compressing members, guide means carried by said tool head for slidably mounting said plurality of movable compressing members, means carried in said tool head defining a maximum compressing position for each of said plurality of compressing members, said maximum compressing positions generally increasing in a predetermined progression from one end of said tool head through opening toward an opposite end of said tool head through opening and ram means for driving said plurality of compressing members towards their respective maximum compressing positions.

4,337,636

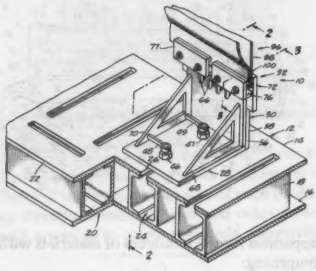
VEHICLE SECURING DEVICE FOR FRAME STRAIGHTENING AND REPAIRING APPARATUS

Allan H. Clausen, 24406 Alliene, Lomita, Calif. 90717

Filed May 12, 1980, Ser. No. 148,726

Int. Cl.³ B21D *1/12*

U.S. Cl. 72—457 **10 Claims**



1. A device for securing a vehicle having a frame to a support surface of a vehicle frame straightening apparatus wherein the support surface includes an elongated opening therethrough having an elongate axis that defines a first axis of the support surface, the device comprising

(a) a base plate comprising two holes therethrough;

(b) two restraining assemblies each rotatably carried within a respective hole for insertion through the elongated opening for securely holding the base plate against the support surface without rotation of the base plate;

(c) gripping means for removably gripping a portion of the vehicle frame;

(d) a receiving member affixed to the base plate and defining a receiving channel substantially perpendicular to the first axis for receiving the gripping means; and

(e) securing means for removably securing the gripping means within the receiving channel so that the gripping means can be removably secured at a plurality of locations within the receiving channel for gripping different portions of the vehicle frame.

4,337,637

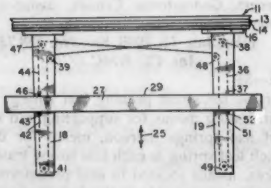
PARALLEL POSITIONING DEVICE

Burton A. Rolland, Zionsville, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.

Filed Sep. 25, 1980, Ser. No. 190,732

Int. Cl.³ B21D *11/22*

U.S. Cl. 72—461 **23 Claims**



1. A positioning device comprising:

mounting means for mounting the device to a base and securing the device in a fixed position on the base;

first and second separately guided means supported by said mounting means for movement in a pre-determined direction toward and away from a reference line established by said mounting means;

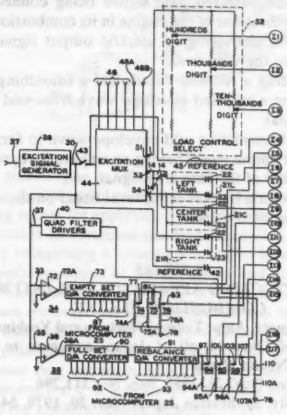
drive means on said mounting means and coupled to said first guided means for moving said guided means in said direction; and

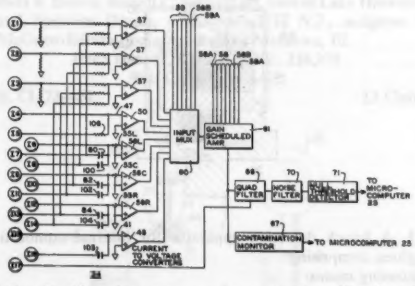
elongated connector means coupled between said first and second guided means to pull said second guided means in said direction in synchronism with movement of said first guided means in said direction.

4,337,638
LIQUID GAGING SYSTEM SELF TEST CIRCUITRY

Kenneth L. Leonard, Brooklyn Park; Dwight D. Colby, Roseville; William R. Dougherty, St. Anthony; Jerome A. Fahley, Fridley, and Martin J. van Dyke, Brooklyn Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1980, Ser. No. 149,797
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—1 R **28 Claims**





1. In a liquid gaging system, an apparatus for self testing the system, comprising:

excitation signal generator means for providing an excitation signal;

precision resistor means for providing a precise resistive load;

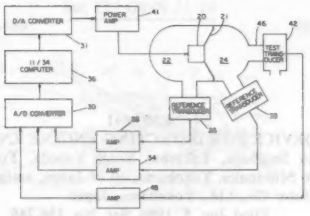
means for monitoring the precision resistor means, the means for monitoring comprising threshold detector means for determining whether the excitation signal has an amplitude above a predetermined threshold; and

means for connecting the precision resistor means to the excitation signal generator means and to the means for monitoring.

4,337,639
GAS VOLUME FLOW RATE MEASUREMENT APPARATUS

Andrew C. Jackson, Davis, Calif., assignor to The Children's Hospital Medical Center, Boston, Mass.

Filed Feb. 29, 1980, Ser. No. 126,125
Int. Cl.³ G01F *1/72, 25/00*
U.S. Cl. 73—3 **14 Claims**



1. Apparatus for measuring gas volume delivered at rapidly varying flow rates, over wide ranges of frequency of variation in said flow rates, comprising

a chamber having an outlet,

means for varying the volume of said chamber to cause a volume of gas to be delivered from said outlet, and

means for measuring changes in the pressure in and volume of said chamber during said varying, so that the volume of gas delivered therefrom can be derived,

wherein said means for measuring the changes in the volume of said chamber comprises

a second closed chamber,

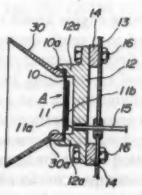
means for subjecting said second chamber to variations in volume equal in magnitude to and simultaneous with said volume variations in said first chamber, and

means for measuring the pressure in said second chamber.

4,337,640
KNOCKING SENSOR

Shigeo Muranaka; Mikio Onoda, both of Yokohama, and Kunihiko Sugihara, Takasho, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 8, 1980, Ser. No. 138,572
Claims priority, application Japan, Apr. 10, 1979, 54-43485; Apr. 10, 1979, 54-47352[U]
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **2 Claims**



1. A knocking sensor for detecting knocking at a given frequency in an internal combustion engine, said engine mounted in a vehicle having a body structure defining a cabin, said sensor comprising:

a thin plate, said plate having a resonant vibration frequency equal to said given frequency;

case means for peripherally mounting said thin plate, said case means being located apart from said engine and being mounted in said cabin;

a piezoelectric element mounted on said plate for providing an electrical signal indicative of any vibration of said plate;

means for defining a resonant cavity which is resonant at said given frequency, said means including said thin plate;

means for sound collection located adjacent said engine; and

means for defining a duct acoustically coupling said sound collection means and said resonant cavity defining means.

4,337,641

DEVICE FOR DETECTING ENGINE KNOCK

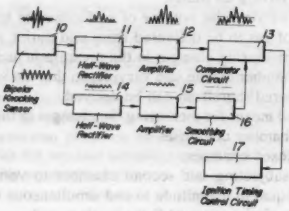
Kunihiko Sugihara, Takasho; Kenji Yoneda, Fujisawa, and Shigeo Muranaka, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

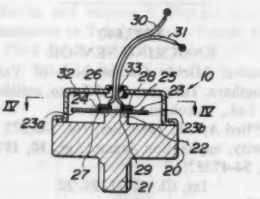
Filed Jun. 5, 1980, Ser. No. 156,745

Claims priority, application Japan, Jun. 6, 1979, 54-77322[U]

Int. Cl.³ G01L 23/22

U.S. Cl. 73—35 **8 Claims**





1. A device for detecting engine knock comprising a bipolar vibration sensor secured to a spark ignition internal combustion engine and having first and second outputs for generating respectively a first signal representing individual ringing engine vibrations due to engine knock and a second signal representing the background engine vibrations due to engine operation, separately, a smoothing circuit connected to the second output side of the vibration sensor for forming a mean value of said second signal, and a comparator circuit having a first input terminal connected a first output side of said vibration sensor and a second input terminal connected to the output side of said smoothing circuit for comparing said mean value with the peak value of said first signal and generating a signal representing whether the engine is in engine knock condition or not.

4,337,642

DEVICE FOR JUDGING KNOCKING STRENGTH

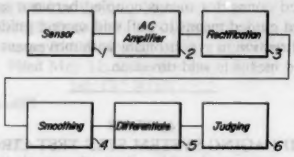
Kenichi Yoshida, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 17, 1980, Ser. No. 169,760

Claims priority, application Japan, Jul. 18, 1979, 54/91199

Int. Cl.³ G01L 23/22

U.S. Cl. 73—35 **6 Claims**



1. A device for judging the knocking strength of an internal combustion engine comprising, in combination:

a resonant type vibration sensor having a resonant frequency which coincides with a knocking frequency range of the engine to be detected, said sensor being connected for detecting vibrations of the engine in its combustion chambers and for delivering an electric output signal corresponding to the vibrations;

means including a rectifier circuit and a smoothing circuit for deriving a rectified envelope wave from said electric output signal;

means for differentiating said envelope wave to form a differentiated output signal having an amplitude representing the steepness of the envelope signal; and

means for judging the knocking level based on the value of the differentiated signal.

4,337,643

KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINE

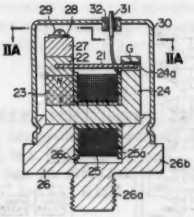
Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 28, 1980, Ser. No. 211,296

Claims priority, application Japan, Nov. 30, 1979, 54-155765

Int. Cl.³ G01L 23/22

U.S. Cl. 73—35 **6 Claims**



1. A knock detecting apparatus for internal combustion engines, comprising:

housing means;

vibrating means made of a magnetic material and having a resonance characteristic in a range of frequencies where knocking of an engine occurs, said vibrating means being disposed to vibrate in at least two different directions of vibration;

magnetic path means mounted on said housing means including a plurality of gaps formed adjacent to said vibrating means, each of said gaps being formed in said magnetic

path means in one of said at least two different vibration directions; and

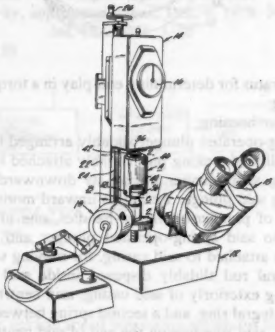
magnetic flux sensing means for sensing a change in the reluctance of said magnetic path means due to a change in the width of said gaps caused by vibration of said vibrating means.

4,337,644

GIMBAL ANVIL FOR SEAL FORCE TEST DEVICE

L. David Leiter, Willow Grove, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Oct. 2, 1980, Ser. No. 193,014
Int. Cl.[3] G01M *3/00*; G01B *5/02*
U.S. Cl. 73—52 5 Claims



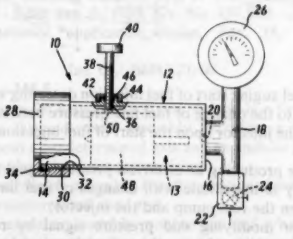
1. A gimbal-type anvil for a seal force test apparatus for checking the integrity of sealed container-closure assemblies including means for applying an external force to the assembly in a direction to compress the resilient sealing element of the assembly comprising a housing adapted to be mounted on the force applying means of the apparatus and at least a pair of annular ring members pivotally connected to said housing about axes transverse to the longitudinal axis of the container-closure assembly, the intersection of said pivotal axes defining a pivot point disposed closely adjacent a feeler wall formed in one of said ring members which engages the cap to apply a displacement force in a direction opposing the residual static force in the resilient sealing element.

4,337,645

LAMP PRESSURE CHECKING DEVICE

Robert S. Brown; Russell C. Schwickert, both of Lake Hiawatha, and Nickolas Demas, Cranford, all of N.J., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Dec. 15, 1980, Ser. No. 216,074
Int. Cl.[3] G01M *3/02*
U.S. Cl. 73—52 12 Claims



1. A lamp-pressure checking device comprising:

(a) a housing;

(b) said housing having a chamber therein;

(c) means for allowing insertion of a lamp bulb into said chamber;

(d) means for sealing said chamber, said means for sealing providing a gastight seal;

(e) means for pressurizing said chamber to a predetermined pressure;

(f) means for measuring the pressure in said chamber; and

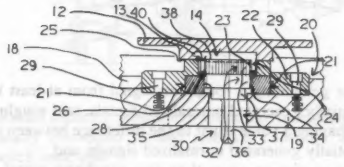
(g) means in said chamber for breaking a lamp bulb inserted therein.

4,337,646

OSCILLATING RHEOMETER DIE SET

M. Foster Fraleigh, 112 Lake Shore Dr., Old Port Cove Marina, North Palm Beach, Fla. 33408

Filed Jun. 11, 1980, Ser. No. 158,505
Int. Cl.[3] G01N *11/14*
U.S. Cl. 73—59 10 Claims



1. An elastomeric testing device having a lower platen, facilitating rapid removal of cured elastomeric samples, comprising:

a stationary die ring secured to the surface of the lower platen, said die ring having an interior circumferential surface defining an aperture, and a recessed portion on the lower area of said interior circumferential surface;

a collar residing in said recessed portion, said collar having a recess therein;

an oscillator having a head extending into said aperture, said head having an outer circumferential surface;

a means for sealing the elastomeric samples between said oscillator and said die ring at said recessed portion of said die ring, said sealing means residing in said recess of said collar; and,

the combined surfaces of said interior circumferential surface, said outer circumferential surface, and said sealing means forming an elastomeric annular cavity whereby the cured elastomer is confined to said elastomeric annular cavity.

4,337,647

ENGINE ROUGHNESS SENSOR

Charles R. Radcliffe, Fraser, and James A. Davis, Bloomfield Hills, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

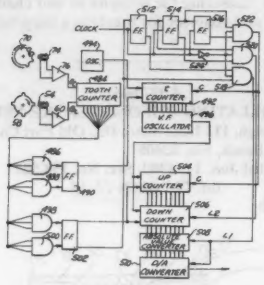
Filed Dec. 7, 1979, Ser. No. 101,396
Int. Cl.[3] G01M *15/00*
U.S. Cl. 73—116 22 Claims

1. A roughness sensor for generating roughness signals indicative of the variation in the magnitude of the torque impulses imparted to a rotating element, the sensor comprising:

means detecting the rotational position of the rotating element for generating first interval signals indicative of a first angular interval of the rotating element's rotation for each torque impulse, and for generating second interval signals indicative of a subsequent angular interval of the rotating element's rotation, wherein the rotating member has a maximum rotational velocity in response to each torque impulse in said subsequent angular interval;

means response to said first and second interval signals for generating a normalized signal having a value propor-

tional to the magnitude of the torque impulse determined by the time required by the rotating element to rotate through said subsequent angular interval and inversely proportional to engine speed determined by the time required for the rotating element to rotate through said first angular interval;



means for generating a roughness signal from at least two sequentially generated normalized signals, said roughness signal having a value equal to the difference between said sequentially generated normalized signals; and

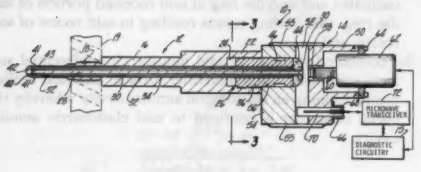
means responsive to more than one roughness signal for generating an average roughness signal having a value indicative of the average of at least two previously generated said roughness signals.

4,337,648

DUAL PROBE COUPLER

John W. Gillespie, Chelsea, Mich., assignor to Jodon Engineering Associates, Inc., Ann Arbor, Mich.

Filed Nov. 3, 1980, Ser. No. 203,631
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **8 Claims**



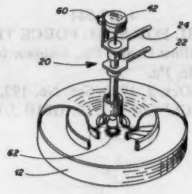
7. For use in a probe assembly for detecting timing events in an internal combustion engine and comprising a probe adapted to transmit microwave and optical energy to and from an engine cylinder and a coupler adapted to be removably received onto said probe for transducing said microwave and optical energies into electrical signals, the improved probe comprising a body having means at one end adapted to be received into an engine cylinder and a second end, microwave transmission means extending entirely through said body and projecting from said first and second ends of said body, and optical transmission means extending entirely through said body coaxially with said microwave transmission means, said microwave transmission means and said optical transmission means being telescopically received one within the other entirely through said body, said second end of said body having an external surface adapted telescopically to receive said coupler in a plurality of angular orientations with respect to the axis of said microwave transmission means, said optical transmission means and said body.

4,337,649

APPARATUS FOR DETERMINING END-PLAY IN A TORQUE CONVERTER

Karl Stagg, 6 Helen Pl., Clifton, N.J. 07011

Filed Jan. 21, 1980, Ser. No. 113,922
Int. Cl.³ G01M *17/00*
U.S. Cl. 73—118 **5 Claims**



1. Apparatus for determining end-play in a torque converter, comprising:

(a) a tubular housing;

(b) a spring-operated plunger slidably arranged in said casing;

(c) a plurality of locking pins slidably attached to said casing, engaging said plunger during its downward motion and releasing said plunger during its upward motion;

(d) a pair of plunger-operating handles, one of which is attached to said spring-operated plunger and the other of which is attached to said casing, for moving said plunger;

(e) a central rod slidably disposed inside said plunger and extending exteriorly of said casing, said central rod including an integral ring, and a second spring between said casing and ring, said ring biasing the end of said central rod out of said casing; and

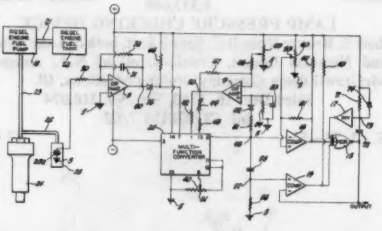
(f) an adjustable measuring gauge having a central pin slidably extending in the direction of said central rod so that an upward movement of said central rod representing the end-play of the torque converter causes said pin to push upward, thereby providing a reading of the end-play on said gauge.

4,337,650

DIESEL ENGINE START OF FUEL INJECTION DETECTING SYSTEM

Herman F. Brandt, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1980, Ser. No. 208,864
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **4 Claims**



1. A diesel engine start of fuel injection detecting system that is sensitive to the change of fuel line pressure between the fuel pump and the injector upon the start of fuel injection, comprising:

means for producing an electrical pressure signal that varies directly in magnitude with changes of fuel line pressure between the fuel pump and the injector;

means for modifying said pressure signal by raising the magnitude thereof to a selected mathematical power;

means for producing a first electrical signal when said modified pressure signal reaches a selected value;

means for detecting the inflection point of said modified

pressure signal upon the start of fuel injection and for producing a second electrical signal upon the detection thereof; and

means responsive to said first and second electrical signals for producing an output signal that is indicative of start of fuel injection.

4,337,651

APPARATUS FOR MEASURING AND INDICATING BRAKING VEHICLE SPEEDS

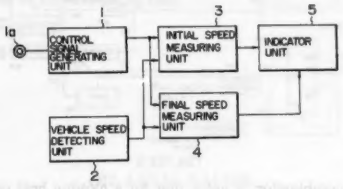
Yasuhisa Yoshino, Okazaki; Akira Kuno, Oobu; Hidetoshi Shimizu, and Harumasa Minegishi, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 24, 1980, Ser. No. 209,421

Claims priority, application Japan, Dec. 6, 1979, 54-169435

Int. Cl.³ G01L *5/28*

U.S. Cl. 73—129 **7 Claims**



1. A braking vehicle speed measuring apparatus comprising:

vehicle speed detecting means for generating a number of vehicle speed pulse signals proportional to the speed of a vehicle;

control signal generating means for detecting the start and end of braking of said vehicle and generating a start-of-braking indication control signal and an end-of-braking indication control signal;

initial speed measuring means for measuring the speed of said vehicle at predetermined intervals irrespective of braking of said vehicle, said initial speed measuring means being responsive to said start-of-braking indication control signal to store the speed of said vehicle just before said start of braking; and

final speed measuring means responsive to said end-of-braking indication control signal to measure the speed of said vehicle just after said end of braking.

4,337,652

TIRE PRESSURE DROP DETECTING APPARATUS

Akira Matsuda, Higashi Murayama; Yoshihiro Hayakawa, Akigawa; Shigeo Yasuda, Musashino; Motoaki Iwasaki, Musashino, and Hiroshi Nishino, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited and Mitaka Instrument Company Limited, both of Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,983

Claims priority, application Japan, Jun. 15, 1979, 54-082412[U]

Int. Cl.³ B60C *23/04*

U.S. Cl. 73—146.5 **23 Claims**

1. Apparatus for detecting a pressure drop in a tire chamber formed in a tire-and-wheel assembly including a wheel rim rotatable about a predetermined axis and an annular pneumatic tire fitted to the wheel rim, comprising:

an electric oscillator assembly fixedly positioned with respect to said predetermined axis, and

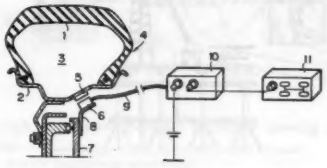
an electric resonator assembly mounted on said wheel rim and arranged to be brought into face-to-face relationship to said oscillator assembly when said tire-and-wheel assembly assumes a predetermined angular position about said predetermined axis,

wherein the resonator assembly comprises:

a protective receptacle fast on said wheel rim and having a concavity open toward said oscillator assembly when said tire-and-wheel assembly assumes said predetermined angular position;

a pressure-sensitive switch unit responsive to a drop of the air pressure in said tire chamber below a predetermined value and including a casing structure fixedly positioned within said receptacle and a member projecting from said casing structure into said tire chamber through an opening in said wheel rim and formed with a passageway open into the tire chamber;

a resonant capacitor positioned within said receptacle;



a resonant inductor positioned within the receptacle and electrically connected to said resonant capacitor across said switch unit; and

a body of dielectric potting compound securely held within said receptacle and having encapsulated therein the resonant inductor and capacitor and at least a portion of the casing structure of said switch unit,

in which said resonant inductor consists of a resonant coil which is wound in a generally rectangular configuration when viewed in plan on a plane to be confronted by said oscillator assembly when said tire-and-wheel assembly assumes said predetermined angular position about said predetermined axis of the wheel rim said switch unit and said resonant capacitor being positioned internally of said resonant coil.

4,337,653

BLOWOUT PREVENTER CONTROL AND RECORDER SYSTEM

John A. Chauffe, Houston, Tex., assignor to Koomey, Inc., Houston, Tex.

Filed Apr. 29, 1981, Ser. No. 258,510

Int. Cl.³ E21B *47/00;* **E03B** *7/07;* **E21B** *44/00*

U.S. Cl. 73—151 **7 Claims**

1. In combination with a blowout preventer control system for controlling the opening and closing of various preventers and measuring the status of various conditions in the system and having various control stations of a control system recorder comprising,

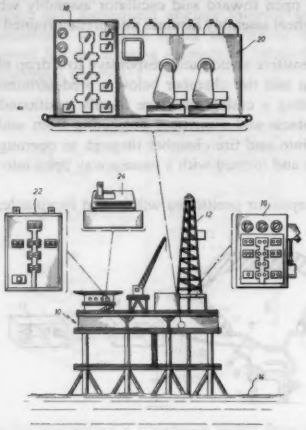
position measuring means connected to various blowout preventers for measuring the position of the various blowout preventers,

operating data gathering means connected to the blowout preventer system for measuring various operating conditions in the system,

a recorder connected to the position measuring means and to the operating data gathering means,

means for periodically actuating the recorder for periodically recording the position of the position measuring means and recording the measurement of the operating data gathering means, and

means connected to the recorder for recording the position of the position measuring means and the measurement of



the operating data gathering means each time the blowout preventer control system is actuated.

4,337,654

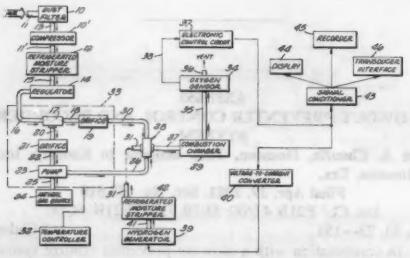
NATURAL GAS CALORIMETER

Robert R. Austin, Pasadena, and Ernst R. Ginkel, San Dimas, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,419

Int. Cl.³ G01K *17/04*

U.S. Cl. 73—190 CV **12 Claims**



1. Apparatus for the automatic and continuous determination of a molar ratio of oxygen to a gas for stoichiometrically complete combustion, comprising: first means to produce a flow of a combustible gas at an invariant, standard volumetric rate; second means to produce a flow of air at an invariant, standard volumetric rate; electrolysis means having an electrical input current to produce a variable titrant flow; third means of combusting said gas, said air and said titrant in a manner such that combustion is substantially complete; a sensor providing electrical signals corresponding to the level of oxygen after combustion; electronic control circuitry connected from said sensor regulating titrant to maintain a predetermined oxygen excess; and utilization means to produce an output which is a linear function of said current.

4,337,655

VALVE PROVIDED WITH A MEASURING INSTRUMENT AND INTENDED FOR A MOVING MEDIUM

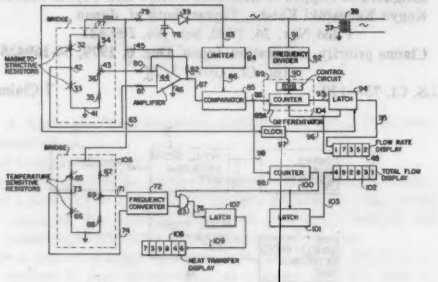
Inge B. Sundstrom, Ekebergabacken 86, Farsta, and Per R. W. Cairenius, Braxstigen 7, Tyreso, both of Sweden

Continuation-in-part of Ser. No. 59,389, Jul. 20, 1979, abandoned, which is a continuation of Ser. No. 828,668, Aug. 29, 1977, abandoned. This application Sep. 29, 1980, Ser. No. 191,442

Claims priority, application Sweden, Sep. 9, 1976, 7610764

Int. Cl.³ G01F *1/115;* G01K *17/00*

U.S. Cl. 73—193 R **8 Claims**



1. In combination, a valve unit for a moving heat carrying medium in a feeder pipe of a heat radiator and electrical measuring means, supplied with voltage at a source frequency, for measuring the rate of flow of the moving medium, said valve unit being part of an integral unit comprising a length of conduit through which the moving medium flows, a propellor-like rotor disposed in the conduit and the valve unit itself, the valve unit being integrated with said conduit and serving in controlling the flow of the moving medium through the conduit, said rotor including a permanent magnet associated therewith, said measuring means including magnetic pulse generator means located exteriorly of said rotor for sensing the magnet field produced by said magent and for generating a train of electrical pulses in accordance with the rotation of said rotor, said measuring means further comprising counting means responsive to a control signal for counting the number of pulses produced during the rotation of the rotor during a selected differential time period related to the source frequency, a frequency divider means for dividing the source frequency so as to produce said control signal with a frequency which is substantially lower than the source frequency, and means for indicating the count reached by said counting means during said selected time period.

4,337,656

DEVICE FOR MEASURING DEPTH AND TEMPERATURE ESPECIALLY FOR TANKS OR THE LIKE

Eugen Rapp, Tilsiterstr. 12, 2805 Stuhr II, Fed. Rep. of Germany

Filed Aug. 12, 1980, Ser. No. 177,528

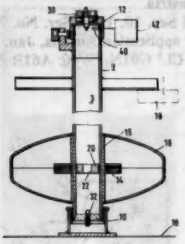
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932243

Int. Cl.³ G01F *23/28*

U.S. Cl. 73—290 V **18 Claims**

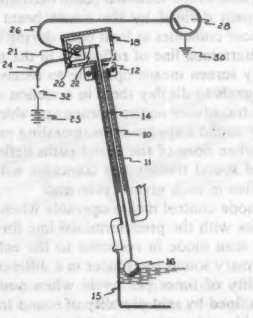
1. Device for measuring depth and temperature, especially for liquid storage tanks or the like, comprising a vertical measuring tube, a float device encircling the measuring tube, a cylindrical reflector within the measuring tube and vertically movable therein and functionally interconnected with said float device for movement therewith, a first ultrasonic trans-

mitter/receiver in one end of the measuring tube, said reflector having a through-hole parallel to the axis of the measuring



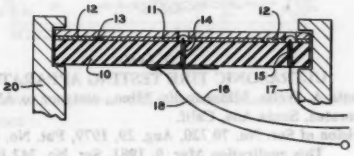
tube, and a second ultrasonic transmitter/receiver placed in the other end of the measuring tube.

4,337,657
OIL LEVEL GAUGE
Benny G. Morris, 3053 Wood St., Portage, Ind. 46368
Filed Aug. 11, 1980, Ser. No. 177,197
Int. Cl.³ G01F *23/10*
U.S. Cl. 73—313 **1 Claim**



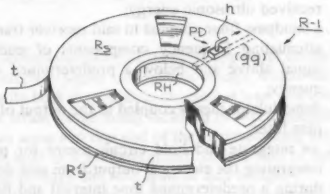
1. A liquid level indicator for use on motor vehicles having an oil pan, a dip stick pipe and an electrical circuit including a battery, a switch and an electrically operable gauge, said indicator comprising a tube mounted in said dip stick pipe having an upper end and a lower end, said tube lower end being adjacent said oil pan, an elongated stiff wire having first and second ends and slidable endwise within said tube between said first and second ends, said first end extending from said tube lower end and carrying a ball float thereon bouyantly supported on the oil in the oil pan, said tube including a housing at said upper end, a variable resistor in said housing connected in said circuit, said wire second end extending from said tube upper end into said housing, said resistor having a shiftable contactor connected to the upper end of said wire, whereby endwise movement of said wire changes the setting of said resistor to activate said gauge when said circuit switch is closed, and means for adjustably fastening said indicator tube to said dipstick pipe at a selected longitudinal position relative to said stiff wire whereby said resistor may be set to give a reading on said gauge corresponding to the initial level of oil in said oil pan.

4,337,658
HUMIDITY SENSOR
Curtus D. Motchenbacher, Minnetonka, and Merle E. Nicholas, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 196,902, Oct. 14, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,697
Int. Cl.³ G01W *1/00*
U.S. Cl. 73—335 **22 Claims**



1. A high impedance relative humidity sensing element comprising:
- a high purity insulating substrate;
- an inner conductive film on the surface of said substrate to form one terminal of said sensing element;
- an outer conductive film on the surface of said substrate, the perimeter of said inner film being completely encompassed by but spaced from said outer film, thereby leaving a continuous loop of substrate exposed between said inner and outer films, said outer film forming the second terminal of the element; and,
- a high impedance humidity responsive film applied to cover said continuous substrate loop and to extend onto said inner and outer conductive films so that said humidity responsive layer forms a continuous loop bridging said spacing in a continuous manner.

4,337,659
COMPUTER TAPE AND REEL SIGNATURE FOR COMPUTER DATA FILE SECURITY
Herbert U. Ragle, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Jun. 29, 1979, Ser. No. 53,304
Int. Cl.³ G11B *5/00, 5/74*
U.S. Cl. 73—432 R **16 Claims**



1. A method of developing a wrapping profile, or winding signature, for a tape web segment adapted to be wrapped upon a prescribed reel, this method being adapted to enhance computer tape file security so that each time such a web is wound upon a reel, the winding mode, after repeated windings, is assumed to leave the array of wrapped web edges in a unique edge wrap profile represented by the position of each winding edge as sighted radially along one side of the reel, such a profile constituting the winding signature, this method involving:
- providing electronic means for automatically monitoring the relative positions of these web-edges and so detecting this "winding-signature", and also for electronically representing and storing these position values as a prescribed

encoded "signature" representation each time the web is wound;

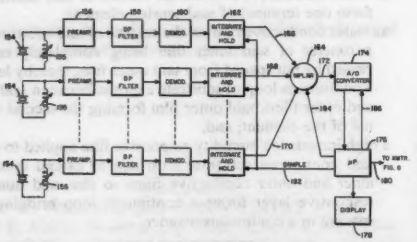
this means being adapted to automatically make such "signature" representations available for use in monitoring unspooling and respooling operations.

4,337,660

ULTRASONIC TIRE TESTING APPARATUS

Arnold A. Weiss, Minneapolis, Minn., assignor to AMF Incorporated, Santa Ana, Calif.

Division of Ser. No. 70,720, Aug. 29, 1979, Pat. No. 4,297,876.
This application Mar. 9, 1981, Ser. No. 242,109
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—600 7 Claims



1. An electronic system for use in ultrasonic inspection apparatus comprising:

(a) a plurality of transmitters for producing directional beams of pulsed ultrasonic energy, the transmitters being physically arranged so that the beams focus on a predetermined area of the product to be inspected;

(b) a plurality of receiving channels, each having

1. an ultrasonic receiver transducer adapted to receive ultrasonic energy transmitted through said product from at least one of said plurality of transmitters and producing an electrical signal characteristic of said received ultrasonic energy;

2. a bandpass filter coupled to said receiver transducer for attenuating frequency components of said electrical signal above and below a predetermined center frequency;

3. demodulator means coupled to the output of said bandpass filter;

4. an integrate and hold circuit means for periodically integrating the electrical output from said demodulator during a predetermined time interval and holding said integrated, signal;

(c) multiplexer means having a plurality of input lines, an output line and a control line, the output from said integrate and hold circuits of said plurality of receiving channels being coupled individually to said plurality of input lines of said multiplexer means;

(d) an analogue-to-digital converter circuit having its input coupled to said output line of said multiplexer means; and

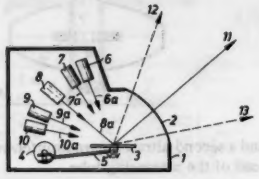
(e) a stored program digital computing means having input means and output means, said input means being coupled to the output of said analogue-to-digital converter circuit, said output means being coupled to said transmitter means, said integrate and hold circuit means and said control line of said multiplexer means.

4,337,661

EQUIPMENT FOR ULTRASONIC EXAMINATION

Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Sep. 10, 1979, Ser. No. 74,162
Claims priority, application Austria, Jan. 23, 1979, 464/79
Int. Cl.³ G01N *29/00*; A61B *10/00*
U.S. Cl. 73—628 8 Claims



1. Equipment for ultrasonic examination by the pulse-echo method, comprising

(a) a plurality of spaced sound transducers spaced in a predetermined pattern, each sound transducer comprising a primary sound transducer and being operable to project a sound beam defining a sound path into a common sectional plane of an object to be examined, and to receive echoes originating in the sectional plane in response to the projected sound beams for deriving echo signals therefrom, the sound paths being spaced from each other in the sectional plane,

(b) a scanning mechanism operable in cycles to sweep the sound paths in the sectional plane oscillatingly so that the sound path defined by the sound beam of each sound transducer coincides at least once during each cycle with a predetermined line of reflection in the sectional plane,

(c) display screen means operable to receive a part of the echo signals to display them in a section scan mode,

(d) sound transducer control means operable to operate said primary sound transducer for operating each sound transducer when none of the sound paths defined by said plurality of sound transducers coincides with the predetermined line in each given cycle, and

(e) scan mode control means operable when the sound path coincides with the predetermined line for displaying said section scan mode in response to the echo signals from said primary sound transducer in a different scan mode in a plurality of times per cycle when none of the sound paths defined by said plurality of sound transducers coincides with said predetermined line.

4,337,662

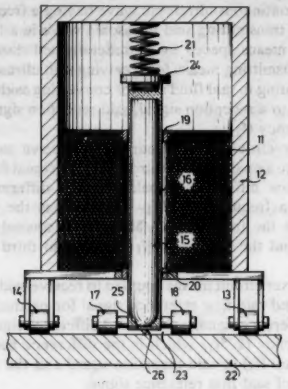
ELECTRODYNAMIC SOUND CONVERTER

Hermann J. Kopineck, Dortmund; Wolfgang Böttcher, Schwerte; Klaus D. Mreyen, Holzwickede; Werner Borchert, Bochum, and Volker Deutsch, Wuppertal, all of Fed. Rep. of Germany, assignors to Estel Hoesch Werke AG, Dortmund, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,820
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949256
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—632 10 Claims

1. Electrodynamic sound converter for non-destructive ultrasonic testing of workpieces during relative movement of the workpiece and the testing head, comprising an annular electromagnet operative for producing a magnetic field; a rod-shaped core extending coaxially through said electromagnet and having a tip projecting beyond the same in direction towards a workpiece to be tested; means mounting said core to be axially slidable relative to said electromagnet, towards and away from the workpiece; means for independently maintain-

ing said electromagnet and said tip of said core at fixed predetermined spacing from a surface of the workpiece; means for



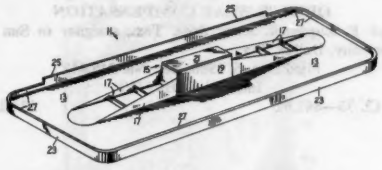
biasing said tip towards said surface; and a high-frequency coil adjacent said tip and operative for producing electromagnetic oscillations.

4,337,663

DEVICE FOR TESTING THE SUCTION STRENGTH OF AN UPRIGHT VACUUM SWEEPER

Thomas E. Baird, 2132 N. 24th St., Springfield, Ill. 62702

Filed Oct. 20, 1980, Ser. No. 198,808
Int. Cl.³ G01L 7/00
U.S. Cl. 73—700 **4 Claims**



1. A device for testing the suction strength of an energized inverted upright-type vacuum sweeper, comprising: a relatively rigid flat plate of a size to sealingly cover the rug nozzle of said inverted upright-type vacuum sweeper, and a centrally attached lifting handle having smooth vertically disposed gripping surfaces thereon, said handle and said plate being integrally molded from plastic material.

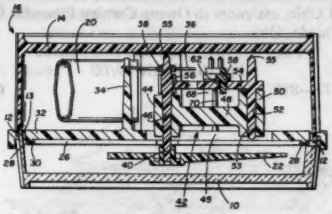
4,337,664

PRESSURE GAUGE CONSTRUCTION

Frederick M. Kipp, and Richard H. Wetterhorn, both of Fairfield, Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 5, 1980, Ser. No. 156,710
Int. Cl.³ G01L 7/04
U.S. Cl. 73—741 **14 Claims**

1. In a pressure gauge comprising a casing, a socket extending outward of said casing for connecting to a source of pressure to be gauged, a Bourdon tube extending from a fixed end in fluid communication with said socket to a free end displaceable in correlation to the values of pressure received at said socket and a movement operably transmitting pressurized displacement of said Bourdon tube to an output pointer shaft supported for rotation, the improvement comprising a formation of polymeric plastic composition molded with said socket and at least a displacement portion of said movement integrally



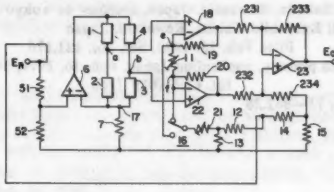
joined therewith and from which said displacement portion has been severed.

4,337,665

SEMICONDUCTOR PRESSURE DETECTOR APPARATUS WITH ZERO-POINT TEMPERATURE COMPENSATION

Hideo Sato; Kanji Kawakami, and Motohisa Nishihara, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 121,093
Claims priority, application Japan, Feb. 26, 1979, 54-20847
Int. Cl.³ G01B 7/16
U.S. Cl. 73—766 **11 Claims**



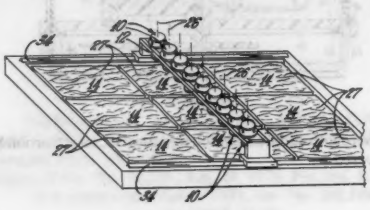
1. A semiconductor pressure detector apparatus comprising:
a strain-electric signal conversion bridge which has two arms with both their ends connected, at least one semiconductor strain gauge being included between midpoints of the two arms and one end of the corresponding arm;
means to hold at a predetermined value a sum of currents flowing through the two arms of said bridge;
two negative feedback amplifiers whose inverting input terminals are connected to each other through a resistance and whose noninverting input terminals are connected to the midpoints of the two arms of said bridge;
a differential amplifier which differentially amplifies outputs of said two amplifiers;
means to generate a potential that is equal to potentials of the midpoints of the two arms in a state in which said bridge is balanced at a predetermined temperature and under a predetermined pressure; and
means to apply the potential of the midpoint potential generating means equal to the potentials of the midpoints, to the inverting input terminal of one of said two negative feedback amplifiers through a resistance.

4,337,666

METHOD AND APPARATUS FOR MEASURING THE EXPANSION OF A MAT OF FIBROUS MATERIAL

Rabindra K. Bhattacharyya, Granville, and James S. Belt, Utica, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 30, 1980, Ser. No. 164,465
Int. Cl.³ G01N 19/00
U.S. Cl. 73—818 6 Claims



1. The method of measuring the expansion of a mat of fibrous material comprising:

(a) moving a contact plate along a line into contact with the surface of the mat;

(b) sensing contact between the contact plate and said surface with a load cell;

(c) sensing the position of the contact plate along said line responsive to the sensing of contact between said contact plate and said surface;

(d) moving said contact plate along said line out of contact with said surface; and

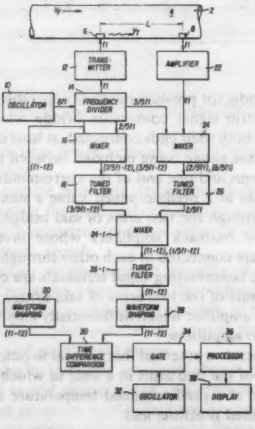
(e) repeating the sequence of steps (a), (b), (c) and (d) during the expansion of said mat.

4,337,667

ULTRASONIC FLOWMETER

Shinzo Takada, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 13, 1980, Ser. No. 121,176
Claims priority, application Japan, Feb. 16, 1979, 54-16945
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.28 1 Claim



1. An ultrasonic flowmeter, comprising:

signal generator means for generating a transmission signal having a frequency (f_1), for generating a first reference signal having a frequency ($3/5f_1$), for generating a second reference signal having a frequency ($2/5f_1$), and for generating a third reference signal having a frequency (f_1-f_2);

transmitting means for converting said transmission signal into a continuous ultrasonic wave having a frequency (f_1) and for transmitting said ultrasonic wave in a fluid;

receiving means spaced by a predetermined distance from said transmitting means for receiving said ultrasonic wave propagating in said fluid and for converting said ultrasonic wave into a reception signal, said reception signal having a frequency (f_1);

first mixer circuit means coupled to receive said second reference signal and said third reference signal for producing a first difference signal, said first difference signal having a frequency ($3/5f_1-f_2$) which is the difference between the frequency ($2/5f_1$) of said second reference signal and the frequency (f_1-f_2) of said third reference signal;

second mixer circuit means coupled to receive said reception signal and said first reference signal for producing a second difference signal, said second difference signal having a frequency ($2/5f_1$) which is the difference between the frequency (f_1) of said reception signal and the frequency ($3/5f_1$) of said first reference signal;

third mixer circuit means coupled to receive said first and second difference signals for producing a corrected reception signal, said corrected reception signal having a frequency (f_1-f_2) which is the sum of the frequency ($3/5f_1-f_2$) of said first difference signal and the frequency ($2/5f_1$) of said second difference signal; and

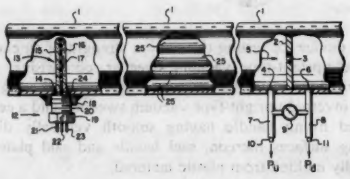
phase difference detecting circuit means coupled to receive said corrected reception signal and to receive said third reference frequency for detecting a phase difference between said corrected reception signal and said third reference signal and for converting said detected phase difference into a time interval.

4,337,668

ORIFICE WEAR COMPENSATION

Joseph E. Zupanick, Richardson, Tex., assignor to Sun Gas Company, Dallas, Tex.

Filed Dec. 5, 1980, Ser. No. 213,442
Int. Cl.³ G01F 1/50
U.S. Cl. 73—861.61 10 Claims



1. In a method for measuring the volumetric rate of flow of a gas through a conduit, which method employs a precision orifice disposed in the gas flow path and means for measuring the pressure differential across the orifice whereby the pressure differential may be utilized in a standard formula to obtain the volumetric rate of flow, the improvement comprising:

(A) determining analagously the wear to the precision orifice by measuring the wear to a probe fixed in the gas flow path upstream of the precision orifice;

(B) deriving an orifice wear correction factor from the measured wear on the probe; and

(C) including the correction factor in a modified standard formula to obtain a volumetric rate of flow value corrected for orifice plate wear.

5. In apparatus for measuring the volumetric rate of flow of a gas through a conduit, which apparatus includes:

(A) a precision orifice disposed in the gas flow path;

(B) means for measuring the pressure differential across said orifice; and

(C) means employing predetermined characteristics of said orifice and said measured pressure differential in a standard formula to obtain the volumetric rate of flow;

the improvement comprising:

(D) a probe fixed in the gas flow path upstream of said precision orifice;

(E) means for measuring wear to said probe;

(F) means employing said measured probe wear for developing and orifice wear correction factor; and

(G) means applying said correction factor to said standard formula;

whereby a volumetric rate of flow is obtained which is corrected against wear of said precision orifice.

4,337,669

CRYOGENIC PUMP AND AIR SAMPLER

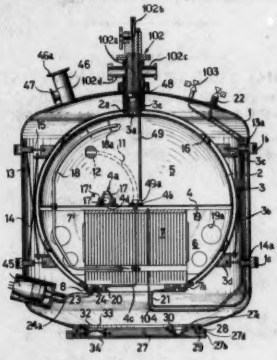
Johann Chatzipetros, Frechen, and Manfred Helten, Titz-Müntz, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,041

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942305

Int. Cl.³ G01N *1/14*

U.S. Cl. 73—863.11 **12 Claims**



1. A cryogenic sampler, especially for air samples, comprising:

an evacuated vessel;

a reservoir for a cryogenic liquid coolant mounted in said reservoir and having an upright normal position;

a membrane partitioning said reservoir into an upper first compartment and a lower second compartment in said position;

a cryogenic adsorber in said second compartment and communicating with said vessel for maintaining a vacuum therein;

a plurality of spaced-apart cold fingers disposed below said adsorber in said position;

means for cooling said fingers and including at least one tube traversing said membrane and opening into said first compartment; and

respective nozzles formed on said vessel and selectively blockable and unblockable for passing respective air samples across said fingers.

4,337,670

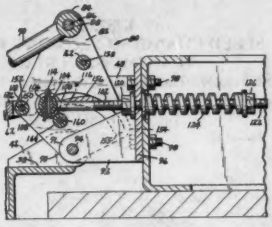
YIELDABLE MULTI-FUNCTION LINKAGE APPARATUS FOR POWERED PIVOTING LOADS

Ronald R. Carlson, Excelsior, Minn., assignor to Sico Incorporated, Minneapolis, Minn.

Filed Oct. 2, 1979, Ser. No. 81,178

Int. Cl.³ F16H *21/44*; A47C *19/06*

U.S. Cl. 74—96 **29 Claims**



1. A yieldable multi-function linkage apparatus for connecting a powered drive arm and a rotatable structure rotatable between first and second end positions comprising:

a fixed connecting plate connected to the rotatable structure for rotation therewith;

a movable connecting plate rotatably attached to said fixed connecting plate for attachment to the powered drive arm; and

holding means for yieldably and releasably connecting the rotatable structure and the movable connecting plate, said holding means enabling said drive arm to be driven without transferring the motion of said rotatable structure to said drive arm when force in excess of the force required to move said rotatable structure acts on said rotatable structure, said holding means disengaging rotationally said drive arm from said rotatable structure when the rotatable structure is rotated to one of its end positions whereby the rotatable structure can be rotated completely independent of the drive arm.

4,337,671

APPARATUS FOR TRANSLATING ROTARY MOVEMENT TO RECTILINEAR MOVEMENT

Andersson P. Ulf, Lindetofta L4, S-53100 Lidköping, Sweden

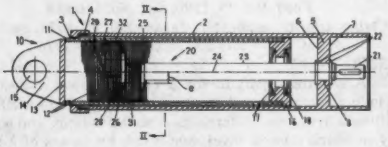
PCT No. PCT/SE79/00127, § 371 Date Feb. 5, 1980, § 102(e) Date Jan. 18, 1980, PCT Pub. No. WO80/00032, PCT Pub. Date Jan. 10, 1980

PCT Filed Jun. 5, 1979, Ser. No. 190,764

Claims priority, application Sweden, Jun. 5, 1978, 7806574

Int. Cl.³ F16H *1/18, 27/02*

U.S. Cl. 74—424.8 C **3 Claims**



1. In a device for translating a rotary movement into a linear movement comprising an elongated cylinder having an internal thread, and a rotatable drive shaft, an associated end of which having a roller body assembly thereon cooperating with said internal thread so that when a relative rotation occurs between said cylinder and said shaft, said parts are displaced in the longitudinal direction in relation to each other, said roller body assembly comprising at least two cylindrical roller bodies axially spaced along the length of said drive shaft and the axes of rotation of which are radially spaced from the axis of said

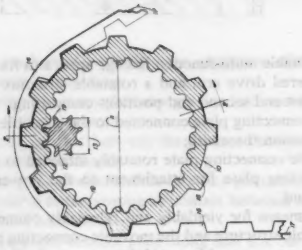
drive shaft and from each other, the outer surfaces of which being provided with ridges extending in planes oriented at right angles to said axis of rotation of each said roller body, the improvement comprising wherein said roller bodies are each of a diameter that closely corresponds to the internal diameter of said cylinder between the edges of said internal thread, and wherein said roller bodies constitute a support for the associated end of said drive shaft.

4,337,672

SPEED CHANGING FLOATING POWER TRANSMISSION RING

Samuel Shiber, 345 Dunbar Rd., Mundelein, Ill. 60060

Filed May 15, 1980, Ser. No. 150,218
Int. Cl.³ F16H 55/17
U.S. Cl. 74—438 **4 Claims**



1. A floating power transmission ring gear system comprising in combination:

a floating power transmission ring gear having an inner toothed periphery with a first pitch diameter, said inner periphery is meshed with and supported by a pinion gear having a second pitch diameter substantially smaller than said first pitch diameter, said ring gear has an outer periphery which is engaged with and supported by a belt means,

the improvement wherein said ring gear is supported by said pinion gear through the gear mesh between them and serves to reduce the linear movement of said belt means per a revolution of said pinion.

4,337,673

CONTROL APPARATUS FOR A VEHICLE POWER TRANSMISSION

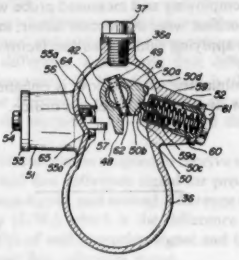
Tamio Kawamoto, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 29, 1980, Ser. No. 116,638
Claims priority, application Japan, Jan. 30, 1979, 54/9871
Int. Cl.³ F16H 57/06; G05G 5/06, 9/18
U.S. Cl. 74—475 **2 Claims**

1. A control apparatus for a vehicle power transmission including a rotatable and axially movable fork rod for effecting shifting into or from different gear shift positions, and a manually operated control level connected, by means of a shifter bracket, to the fork rod for effecting the rotation and/or axial movement thereof, and having a shift pattern in which a forward running gear shift position and a reverse running gear shift position are located on substantially the same shift line, the improvement therein comprising:

a reverse misselection preventing mechanism which prevents shifting from the forward running gear shift position directly into the reverse running gear shift position, and which includes a first member formed integrally with the shifter bracket and projecting radially outwardly from the fork rod, and a second member supported by a housing for the control lever, said second member being movable between a first position in which said first and second members abut with each other preventing rotation of the fork rod, and a second position in which said first member is not moved by said second member permitting rotation of the fork rod; and

a selection check mechanism which provides selection click feeling when the fork rod is rotated to a selected position



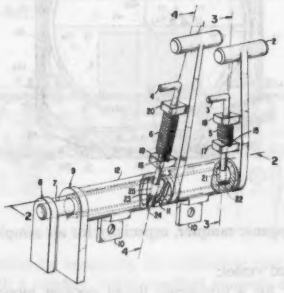
in which a shift can be made into at least one of the gear shift positions, and which includes a first element formed integrally with the shifter bracket in the vicinity of said first member of the reverse misselection preventing mechanism, a second element movably supported by said housing, and resilient means urging said second element against said first element, one of said first and said second elements having such a profile as to cooperate with the other to produce said selection click feeling.

4,337,674

LATERAL TUBE TRANSMISSION CONTROL

Roger W. Lawrence, 30 E. Cliff St., Somerville, N.J. 08876

Filed Jul. 7, 1980, Ser. No. 166,166
Int. Cl.³ G05G 5/10, 5/18
U.S. Cl. 74—475 **3 Claims**



1. An apparatus for selecting tansmission gear positions comprising:

(a) one lever;

(b) one arm;

(c) a shaft with a diametrical hole;

(d) a housing with a transverse hole; and

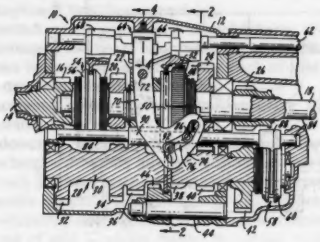
(e) a locking means which simultaneously engages the diametrical hole in the shaft and the transverse hole in the housing for locking automatically the position of said lever relative to said housing to restrain said lever from moving relative to said housing for positively holding the gear selection made by positioning said lever.

4,337,675

TRANSMISSION SHIFT CONTROL APPARATUS

John W. Holdeman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,128
Int. Cl.³ G05G 5/10, 9/12
U.S. Cl. 74—477 6 Claims



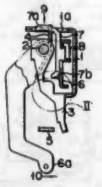
1. In a multiple speed ratio power transmission having gear ratios selectively engageable for defining torque delivery paths between an input member and an output member, and shift control means for selectively engaging said gear ratios; the improvement wherein said shift control means comprises first engaging means slidable in an engaging direction for engaging one gear ratio, second engaging means slidable in an engaging direction for engaging another gear ratio, and a lever pivotable about a fulcrum between an intermediate position and first and second engaging positions, said lever and said engaging means defining camming means for sliding said first engaging means in its engaging direction in response to pivoting of said lever from said intermediate position to said first engaging position and for sliding said second engaging means in its engaging direction in response to pivoting of said lever from said intermediate position to said second engaging position, said caming means preventing sliding of said second engaging means as said lever pivots between said intermediate and first engaging positions and preventing sliding of said first engaging means as said lever pivots between said intermediate and second engaging positions, said second engaging means being slidably supported by said first engaging means.

4,337,676

MANUAL OPERATION DEVICE

Shinsaku Tanaka, Tokyo, and Takashi Watanabe, Kawasaki, both of Japan, assignors to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,372
Claims priority, application Japan, Jul. 23, 1979, 54-93413; Jul. 23, 1979, 54-11576
Int. Cl.³ G05G 1/02, 5/00, 17/00
U.S. Cl. 74—483 PB 5 Claims



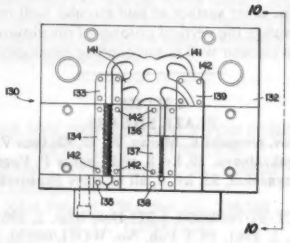
1. A manual operation device which comprises:
a plurality of operation members;
a drive rotatable member acting as a source of drive power;
a driven rotatable member detachably fitted to the drive rotatable member;
an engagement member for engaging and locking the driven rotatable member in a state disengaged from the drive rotatable member;
a transmission member movable back and forth with the driven rotatable member; and
a plurality of self-returning insertable actuating members which are associated with respective ones of said operation members, and constructed to be manually moved between the transmission member and the associated operation members to disengage the engagement member from the driven rotatable member and also transmit a moment of the transmission member to the operation member.

4,337,677

METHOD OF MAKING DIE-CAST MASONRY DRILL

James E. Rauckhorst, Geneva, and Thomas J. Skingle, Parma, both of Ohio, assignors to Acme-Cleveland Corporation, Highland Heights, Ohio

Division of Ser. No. 116,225, Jan. 28, 1980, Pat. No. 4,314,616.
This application Nov. 28, 1980, Ser. No. 211,421
Int. Cl.³ B22D 19/06
U.S. Cl. 76—108 A 9 Claims



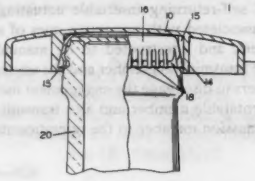
1. A method of making a masonry drill which comprises the steps of:
forming an insert from a hard material, said insert being formed with sides having parallel planar side portions and a chisel edge across the top of the insert with leading cutting edges on either side of said chisel edge and a bottom edge opposite said cutting edges, said insert also being formed with means for interlocking with a drill body, said interlocking means comprising a pair of projections, one projection extending from the plane of each of said planar side portions, each of said projections extending the greatest distance from the plane of said side portion near the bottom edge of said tip;
placing said insert in a mold for casting a drill having an axially elongated body with spiral grooves cast in the exterior surface of said body substantially along its length;
casting the drill by filling said mold with molten metal to form a cast drill therein, said molten metal substantially surrounding said projections, and covering the portion of each of said projections nearest said chisel edge to form a secure interlocking relationship between said insert and said body; and
allowing said cast drill to cool with said molten metal solidifying and subsequently contracting around said insert to securely hold said insert in place in said drill.

4,337,678

THREADED CLOSURE REMOVAL TOOL

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 30, 1981, Ser. No. 249,048
Int. Cl.³ B67B 7/18
U.S. Cl. 81—3.4 3 Claims



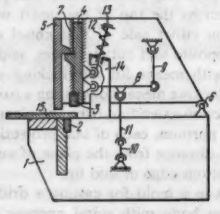
1. A hand operated tool for removing a threaded closure from a threaded bottle neck, said closure having a plurality of vertical grooves peripherally spaced around its upper exterior portion, comprising in combination, a molded plastic body having an oval-shaped top element, an integral vertical flange depending from the perimeter of said top element and engageable by the fingers to impart torque to the tool, a circular integral wall depending from and closed at one end by said top element and centrally located within the perimeter of said vertical peripheral flange, diametrically opposed portions of said circular wall being integral with said peripheral flange to facilitate the transmission of torque to said circular wall, with said wall and flange having the seme vertical height in said integral portions, and a plurality of peripherally spaced vertical ribs on the inner surface of said circular wall respectively adapted to engage the vertical grooves of the closure by application of said circular wall in surrounding relationship thereto.

4,337,679

PLATE SHEARS

Gleb L. Krylov, prospekt K. Marxa, 20, kv. 93; Ivan V. Stanovoi, ulitsa Privokzalnaya, 29, kv. 8, and Georgy P. Fuga, ulitsa Z. Kosmodemyanskoi, 93, kv. 4, all of Azov Rostovskoi oblasti, U.S.S.R.

PCT No. PCT/SU79/00050, § 371 Date Mar. 2, 1981, § 102(e) Date Mar. 2, 1981, PCT Pub. No. WO81/00070, PCT Pub. Date Jan. 22, 1981
PCT Filed Jul. 2, 1979, Ser. No. 243,908
Int. Cl.³ B26D 7/02; B23D 15/06
U.S. Cl. 83—385 1 Claim



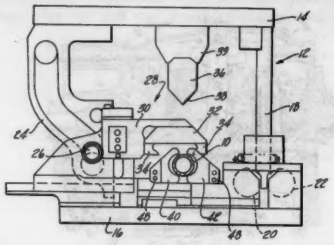
1. Plate shears comprising a bed-mounted fixed blade cooperating with a movable blade secured on a blade beam mounted in a clamping beam articulated to the bed, and a drive for actuating the blade and clamping beams, characterized in that the clamping beam (5) is provided with guides (7) for the blade beam (4) to be mounted therein for reciprocation in the direction of shearing from the drive and through the agency of a system of articulated levers (8,9) with one of these levers being articulated to the blade beam (4) and to the drive.

4,337,680

DIE JAW MEMBERS FOR TUBE CUTOFF APPARATUS

John J. Borzym, 4820 Schoolbell, Birmingham, Mich. 48010

Filed Dec. 5, 1980, Ser. No. 213,296
Int. Cl.³ B23D 21/00
U.S. Cl. 83—456 12 Claims



1. For use with apparatus for cutting off lengths of an elongate workpiece and of the type including a notching blade and a severing blade respectively shiftable in first and second paths of travel within a reference plane and transverse to said workpiece for respectively producing a notch in the periphery of said workpiece and for severing said workpiece through said notch, a pair of opposed clamping members for holding said workpiece during notching and severing thereof, each of said clamping members comprising:

a body of rigid material having a blade supporting surface in one face thereof extending essentially parallel to said reference plane and in close proximity to said severing blade, said body further including

(1) a clamping surface configured to complementally engage a side of said workpiece,

(2) first surface portions relieved relative to said blade supporting surface defined in said one face thereof adjacent said blade supporting surface and aligned with said first path of travel

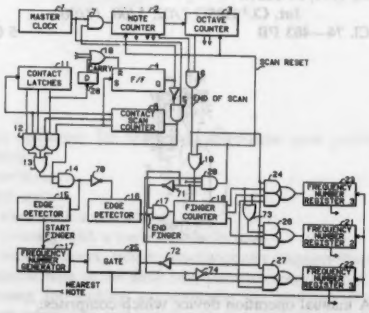
the first relieved surface portions of the bodies of an associated pair thereof defining a slot in said pair of clamping members through which said notching blade may pass.

4,337,681

POLYPHONIC SLIDING PORTAMENTO WITH INDEPENDENT ADSR MODULATION

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Aug. 14, 1980, Ser. No. 178,246
Int. Cl.³ G10H 1/057, 1/22, 7/00
U.S. Cl. 84—1.24 22 Claims



1. In a keyboard operated electronic musical instrument in

which the pitches of the generated tones are determined by frequency numbers corresponding to actuated keyboard switches, apparatus for providing polyphonic portamento effect in response to the lateral displacement of any number of N player fingers in contact with said keyboard switches and for providing tones with ADSR envelope modulation functions in response to the contact of said N player fingers with said keyboard switches comprising:

a switch array comprising a multiplicity of keyswitches arranged in a linear array such that a plurality of contiguous keyswitches is actuable by each of said N fingers in contact with said switch array,

a scanning means for providing scanning signals to said switch array,

a detection means responsive to said scanning signals whereby detection signals are generated corresponding to each actuated keyswitch in said switch array,

a center detection means responsive to said detection signals whereby a note signal is generated corresponding to each one of said N player fingers in contact with said switch array,

a frequency number generator responsive to each said note signal wherein said frequency numbers are generated thereby producing said polyphonic portamento effect corresponding to the lateral displacement of said player fingers in contact with said keyboard switches,

an envelope generator means for creating said ADSR envelope modulation functions in response to a control signal,

a note assignor means responsive to said detection means whereby said control signal is generated corresponding to each of said N player fingers placed in contact with said switch array,

a tone generation means responsive to said frequency numbers whereby musical tones are generated at pitches corresponding to said frequency numbers, and

an envelope modulation means for modulating each of said musical tones by a corresponding one of said ADSR envelope modulation functions thereby producing said tones with an ADSR envelope modulation function in response to the contact of said N player fingers in contact with said key board switches.

4,337,682

PIANO SOUNDBOARD

Gerhard Schwichtenberg, Wolfenbüttel, Fed. Rep. of Germany, assignor to Wilhelm Schimmel Pianofortefabrik GmbH, Fed. Rep. of Germany

Filed Apr. 15, 1980, Ser. No. 140,488

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915959

Int. Cl.³ G10C *3/06*

U.S. Cl. 84—193 **15 Claims**

1. A soundboard for a piano or the like comprising a laminate having a metal core for the production of sound vibration, said metal having a modulus of elasticity and an inherent damping factor corresponding to steel of at least a grade St 34, and at least one outer cover layer bonded thereto in full surface contact on each side thereof, each of said outer cover layers having a damping characteristic corresponding to that of wood.

4,337,683

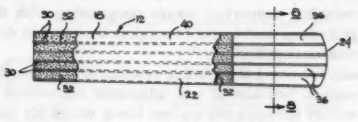
SYNTHETIC WOODWIND INSTRUMENT REED AND METHOD FOR ITS MANUFACTURE

John G. Backus, 2233 Via Gundalana, Palos Verdes Estates, Calif. 90274

Filed Jul. 22, 1980, Ser. No. 171,168

Int. Cl.³ G10D *9/02*

U.S. Cl. 84—383 A **9 Claims**



1. A synthetic woodwind reed formed with a vamp and base portion comprising

a plurality of substantially parallel longitudinal rib members fabricated of epoxy resin reinforced with a material selected from the class consisting of graphite and boron and having a high modulus of elasticity, a low density and a loss factor comparable to that of natural cane (Arundo Donax),

a low density binder material in the spaces between said ribs for binding said ribs together,

the number of said ribs and the width thereof being chosen to make for an effective modulus of elasticity and density for the reed so as to afford a natural vibration frequency thereof of at least 2000 Hz.

4,337,684

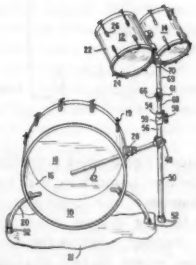
OUTRIGGER HOLDER ASSEMBLY FOR PERCUSSION MUSICAL INSTRUMENTS

Alfred J. Le Mert, Mount Prospect, Ill., assignor to Ludwig Industries, Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 236,768

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—421 **6 Claims**



1. An outrigger holder assembly for percussion musical instruments including at least one bass drum adapted to be placed on a supporting surface and at least one other percussion musical instrument, said assembly comprising

a first vertical support member adapted to rest on said supporting surface,

a rigid bass drum positioning member connected between the bass drum and the vertical support member,

a pivotal connection between the vertical support and the bass drum positioning member,

means affording adjustment of the distance between the vertical supporting member and the bass drum,

an extension member secured to the first vertical support member,

means for vertically adjustably connecting the first vertical support member and the extension member together,

a first pivot means positioned at the end of the extension member spaced from the connection with the vertical support,

a second extension member including a second pivot means connected to said first pivot means at said end of the extension member and provided with a second pivot means at the other end,

a third extension member provided with a third pivot means connected to said second pivot member at one end and including supporting means cooperating with the other percussion instrument to support the same in detachable relationship, and

means for fixing the rotative position of said pivots and the vertical position of said adjustable connection and for readily releasing the various fixing means for said pivots and said adjustable connection.

4,337,685

APPARATUS FOR GENERATING A PROPELLANT GAS

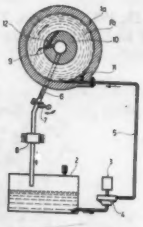
German Munding, Bad Friedrichshall; Wolfgang Müller, Möckmühl, and Heinrich Strobl, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 12, 1976, Ser. No. 677,236

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1975, 2518149

Int. Cl.³ F41F *1/04*

U.S. Cl. 89—7 14 Claims



1. An apparatus for generating propellant gas such as used in propelling projectiles, comprising wall means defining at least one rotation chamber which forms a propellant gas generator and means for feeding at least one liquid propellant tangentially into said chamber, wherein the improvement comprises that said feeding means include a closed liquid propellant circuit connected to said rotation chamber for flowing propellant into and removing it from said rotation chamber, said feeding means includes an inlet into and an outlet from said rotation chamber for generating a rotating ring of propellant in said rotation chamber, and blocking means in operative association with each of said inlet and said outlet for blocking flow of the propellant therethrough into and out of said rotation chamber during the period commencing with the increase of the pressure propellant within the rotation chamber at the outset of the generation of the propellant gas and terminating at the decrease of the pressure of the propellant after the completion of the generation and utilization of the propellant gas.

4,337,686

HYDRAULIC FORCE MULTIPLYING DEVICE

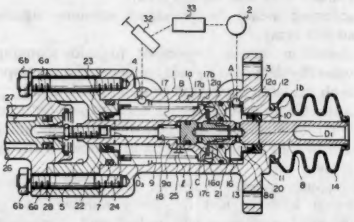
Yoshimoto Ohta, Ichikawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Mar. 7, 1980, Ser. No. 128,123

Claims priority, application Japan, Mar. 8, 1979, 54/29762[U]; Mar. 8, 1979, 54/29763[U]; Mar. 8, 1979, 54/29765[U]

Int. Cl.³ F15B *9/10;* F16J *1/10*

U.S. Cl. 91—49 9 Claims



1. A hydraulic force multiplying device comprising:

a housing having an inlet port connected to a source of hydraulic pressure and an outlet port;

an input rod and an output rod, one end of each of said input and output rods being slidably connected to one end of the other rod within said housing;

a free piston slidably disposed between the outer circumference of the input rod and the inner wall of the housing and dividing the interior of the housing into an inlet side oil chamber and an outlet side oil chamber, said free piston being engaged with said output rod;

a passage formed in said input rod for connecting the two oil chambers; and

a valve for controlling oil flow in said passage, said valve having a valve member on one of said input and output rods and a valve seat member on the other of said input and output rods, one of said members being resiliently displaceable relative to the associated rod and in the direction of the axis of the rod, whereby when the input rod moves rapidly toward the output rod said valve element engages with said valve seat element for generating a differential pressure between the inlet and outlet chambers, and the input rod can move further toward and relative to the output rod by the resilient displacement of said one element.

4,337,687

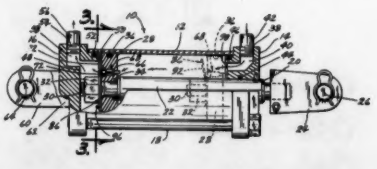
POPPET TRIP DEVICE FOR HYDRAULIC CYLINDERS

Robert A. Hoover, Sioux City, Iowa, assignor to Prince Manufacturing Corporation, Sioux City, Iowa

Filed May 23, 1980, Ser. No. 152,850

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—401 12 Claims



1. A hydraulic cylinder unit comprising,

an elongated cylinder having a head end and a base end,

a piston rod slidably extended through said head end,

a piston mounted on said rod interiorly of said cylinder,

said piston including a generally axially extended poppet

bore therethrough, said bore being radially offset from the axis of said piston rod at a position radially intermediate the piston rod and cylinder,

a pair of oppositely disposed valve seats in said bore,

a poppet supported within said bore for axial movement between said valve seats, said poppet including oppositely disposed valve heads adapted for seated engagement on said valve seats respectively in response to movement of said poppet in opposite directions,

said poppet including head and base ends extended outwardly from said piston when said poppet is moved toward said cylinder head and base ends respectively,

said head end of said poppet adapted for engagement with said cylinder head end in response to movement of said piston to said cylinder head end whereby said poppet is unseated and fluid communication is established through said poppet bore,

a contact member radially positioned within said cylinder for engagement with said cylinder base end and base end of the poppet, and

means for supporting said contact member at a position between said cylinder base end and piston for engagement with said base end of the poppet in response to movement of said piston rod to the cylinder base end whereby said poppet is unseated and fluid communication is established through said poppet bore,

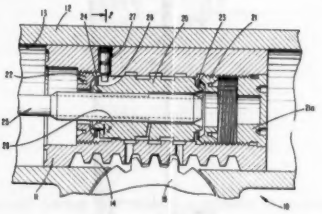
said contact member comprising a spring clip having a fixed generally flat portion and an arm extended from said fixed portion transversely across said cylinder for engaging said base end of the poppet, and said cylinder base end said arm being axially deflected relative to said fixed portion upon engagement with said cylinder base end.

4,337,688

POWER STEERING GEAR WITH ADJUSTABLE VALVE POSITIONING PIN

Peter H. Sheppard, R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Filed Nov. 26, 1979, Ser. No. 97,388
Int. Cl.³ F15B *9/10*; F16K *31/50*
U.S. Cl. 91—422 **8 Claims**



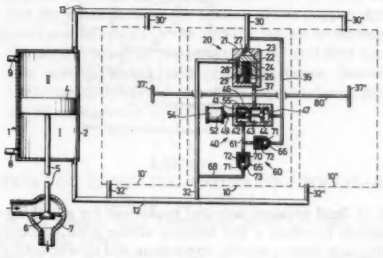
1. An integral power steering gear having a reciprocating power piston in a cylinder, a valve within the piston to selectively distribute pressurized fluid to a first and second end of the piston within the cylinder for steering action, a steering input shaft operatively engaging the valve, an output means in engagement with said piston, the improvement comprising valve guide means including a pin having side guide surfaces and extending between said piston and said valve to allow relative reciprocating action but not rotation, and means including the side guide surfaces of said pin to vary selectively a lateral clearance of said guide means relative to said valve to provide optimum clearance, whereby to gain maximum reversibility of the valve within the piston and improved ease of manufacture.

4,337,689

SAFETY SYSTEM FOR A DOUBLE ACTING SERVOMOTOR

Samuel Heusler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 6, 1980, Ser. No. 157,059
Claims priority, application Switzerland, Jun. 22, 1979, 5856/79
Int. Cl.³ F15B *13/042, 13/043*
U.S. Cl. 91—438 **4 Claims**



1. A safety system for a double-acting servomotor having a cylinder and a piston disposed in the cylinder to divide the cylinder into a pair of chambers while being movable between a control position and a safety position; said safety system comprising

a pressure responsive shut-off valve connected between said chambers to control a flow of medium therebetween, said shut-off valve being operable between a closed position blocking communication between said chambers and an open position connecting said chambers to each other, said shut-off valve including a housing, a spool having a valve disk connected thereto to define a chamber in said housing on on each side of said disk which communicate with one another when said valve disk is in said open position and a valve control chamber on the side of said spool which is remote from said valve disk, one of said two valve chambers being connected on one side on said disk to said one servomotor chamber and on another side of said disk to said other servomotor chamber;

a control valve having a pair of inputs and an output, one of said inputs being connected to one of said chambers which is increasing when the piston moves into the safety position and said output being connected to said valve control chamber of said shut-off valve to switch said shut-off valve between said positions thereof; and

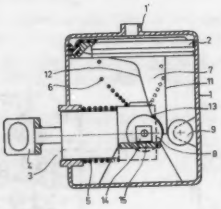
a pressure responsive selector having a pair of inputs and an output, one of said selector inputs being connected to one of said chambers which is decreasing when the piston moves into the safety position, the second of said selector inputs being connected to said one chamber and said selector output being connected to a selected one of said selector inputs which is connected to the other of said chambers and receiving pressure medium from this servomotor chamber and to the other of said inputs of said control valve whereby with said control valve output connected with said other input of said control valve, said shut-off valve is in said closed position and with said control valve output connected with said one input of said control valve, said shut-off valve is in said open position.

4,337,690

FLUID PRESSURE ACTUATED BRAKE UNIT

Lars M. Severinsson, Hishult, Sweden, assignor to SAB Industri AB, Landskrona, Sweden

PCT No. PCT/SE79/00175, § 371 Date May 6, 1980, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/00605, PCT Pub. Date Apr. 3, 1980
PCT Filed Aug. 22, 1979, Ser. No. 193,275
Claims priority, application Sweden, Sep. 8, 1978, 7804953
Int. Cl.³ F16J 1/10
U.S. Cl. 92—129 2 Claims



1. A fluid pressure actuated brake unit for a braking system operable to effect a full braking stroke with successive fast acting low leverage brake application and slower acting higher leverage brake operation partial braking strokes comprising in combination, a housing defining a cylinder with a piston therein movable axially, means confining a braking system push rod assembly to move axially in a direction perpendicular to the piston, a wedge element movable with said piston for engaging during said slower acting partial stroke said push rod assembly with a wedge surface inclined at a wedge angle relative to the axis of the piston to transmit a force from the piston to move the push rod in a braking stroke direction over the brake operation partial stroke, said wedge surface presenting the wedge angle terminating in an edge departing from the inclination of said wedge surface, a working roller for moving the push rod assembly having a roller circumference positioned to mate with said edge and wedge angle during the full braking stroke thereby to coact the wedge angle with said working roller during the brake operation partial stroke following the brake application partial stroke in a mode such that only the wedge edge contacts the roller during the application stroke for the low leverage fast acting portion of the braking stroke and provide a gradual transition from the low leverage partial stroke to the higher leverage stroke as the wedge angle contacts the roller in the higher leverage brake operation partial stroke, said roller circumference and wedge element being positioned so that braking stroke contact between the roller and wedge element is limited to the edge and wedge surface of the wedge element.

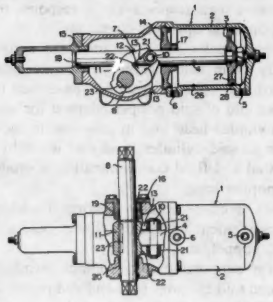
4,337,691

VALVE DRIVING APPARATUS

Hisao Tomaru, Yamanashi, Japan, assignor to Kitazawa Valve Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,403
Claims priority, application Japan, Jun. 8, 1979, 54-78108[U]; Jun. 8, 1979, 54-78110[U]; Jun. 8, 1979, 54-78111[U]
Int. Cl.³ F01B 9/00
U.S. Cl. 92—138 3 Claims

1. In a valve driving apparatus having:
a cylinder;
a piston slidably positioned in said cylinder for reciprocating with respect to said cylinder;
a piston rod attached to said piston and slidably positioned within said apparatus;
a valve drive shaft rotatably positioned within said apparatus;
a conversion-transmission means operatively associated with said piston rod and said valve drive shaft for converting reciprocating movement of said piston rod to a rotational movement of said valve drive shaft; and
piston rod bearing supports for supporting said piston rod, and drive shaft bearing supports for supporting said drive shaft;
the improvement comprising:



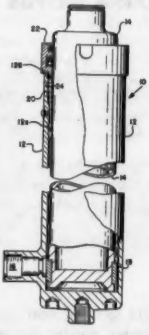
a plurality of cylindrical bearing members having the same shape and dimensions, each of said bearing members being respectively inserted into one of said bearing supports for respectively supporting said piston rod in sliding movement and supporting said drive shaft in rotational movement; and
whereby said bearing members can be interchanged with each other.

4,337,692

FLUID CYLINDER ASSEMBLY HAVING MINIMIZED OUTSIDE DIAMETER

Elie C. Sifri, Gresham, Oreg., and Michael D. Schmidt, Springfield, Ohio, assignors to Cascade Corporation, Portland, Oreg.

Filed Jul. 25, 1980, Ser. No. 172,129
Int. Cl.³ F16J 15/18
U.S. Cl. 92—168 4 Claims



1. A fluid cylinder assembly comprising an elongate cylindrical shell having interior and exterior arcuate surfaces respectively, a plunger member movable longitudinally within said shell and extensible from one end of said shell, annular retainer means inserted within said end of said shell in surrounding relationship to said plunger member for limiting the extensibility of said plunger member from said end of said shell, mating engagement means, formed on said interior surface of said shell at a position proximate said end of said shell and upon said annular retainer means respectively, for detachably fastening said annular retainer means to said interior surface of said

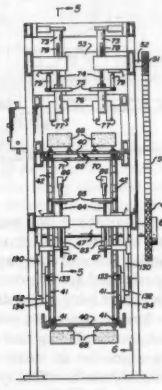
shell so as to prevent withdrawal of said annular retainer means from said end of said shell, and resilient seal means for preventing leakage of fluid between said annular retainer means and said interior surface of said shell, said engagement means formed on said interior surface of said shell being separated from said end of said shell by an annular portion of said interior surface having no said engagement means formed therein, said resilient seal means being interposed compressibly in a position between and abutting said annular retainer means and said annular portion of said interior surface respectively so as to be nearer to said end of said shell than any of said engagement means, said annular retainer means including a flange portion exterior of said end of said shell and projecting radially outward beyond said exterior surface of said shell at said end thereof, said flange portion having means defining a recess therein for encircling said exterior surface of said shell at said end thereof so as to resist radial expansion of said end of said shell, said recess having a wall abutting said exterior surface of said shell at said end of said shell, said wall of said recess and said exterior surface of said shell at said end of said shell both having mating surface means inclined radially inwardly toward said end of said shell for forcibly urging said shell inwardly toward said resilient seal means in response to the fastening of said annular retainer means to said interior surface of said shell by said engagement means.

4,337,693

PEPPER CORING AND SLICING APPARATUS

Peter L. Dandrea, Landisville, N.J., assignor to Garden Green Vegetable Processors, Inc., Landisville, N.J.

Filed Nov. 26, 1980, Ser. No. 211,328
Int. Cl.³ A23N *4/12, 4/22*
U.S. Cl. 99—491 **20 Claims**



1. A pepper coring and slicing apparatus comprising in combination,

(a) pepper holding means for holding a pepper at a pepper coring station,

(1) oriented with its stem up so that the pepper core is disposed along a vertical axis,

(2) with the top exposed and a pair of completely exposed side regions extending from the top to the bottom of the pepper and on diametrically opposite sides of the pepper, and

(3) with the bottom of the pepper extending between the said pair of side regions exposed,

(b) vertically reciprocable pepper coring and slicing means comprising,

(1) first coring and slicing means disposed above said pepper holding means including a hollow cylindrical corer disposed with its cylindrical axis vertical and having a cutting edge completely about its lower end, and a pair of spaced apart co-planer side cutting blades having linearly extending lower cutting edges extending radially outward from said corer from diametrically opposite sides of the latter and spaced downward at a lower elevation than the corer cutting edge, and

(2) second slicing means disposed below said pepper holding means including a planer bottom cutting blade having a linearly extending upper cutting edge oriented substantially co-planerly with the said pair of upper spaced apart co-planer cutting blades, and

(c) actuating means for vertically reciprocating said first and second coring and slicing means to cause

(1) said first means to descend so that said corer cuts through the pepper top and cuts the core from the pepper, and said side cutting blades cut the top, sides and the outer parts of the bottom of the pepper, and

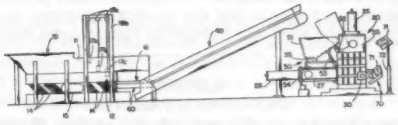
(2) said second means to rise and cut the uncut bottom of the pepper between the cuts made by said first means side cutting blades, said actuating means thereafter retracting said first and second coring and slicing means out of engagement with the pepper.

4,337,694

SYSTEM FOR HANDLING AND BALING METALLIC SCRAP MATERIAL

Stanford M. Brown, 1647 Thornapple River Dr., SE., Grand Rapids, Mich. 49506

Division of Ser. No. 108,508, Dec. 31, 1979. This application Jun. 29, 1981, Ser. No. 278,629
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—45 **9 Claims**



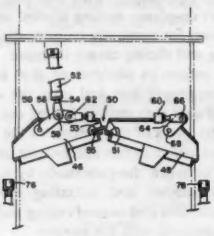
1. A system for handling and baling metallic scrap material which comprises a baling means having a charge box with an opening on the top thereof for receiving the scrap material and a means for compacting the material into a bale, the improvement comprising a first hopper means mounted adjacent said baling means at the side thereon adjacent said opening of said charge box; means for mounting said first hopper means for movement from a loading position for receiving metallic scrap material to a dumping position in which dumping position the material in said first hopper means is dumped into said charge box through said opening; actuating means for actuating said first hopper means from said loading position to said dumping position; a weigh means for sensing the weight of said material in said hopper; actuating means for moving said hopper means from the said loading position to said dumping position, said actuating means being responsive to a predetermined weight of material sensed by said weight means; a second hopper means located at a remote position from said baling means, said second hopper means including a first conveyor means for conveying said material from a receiving end of the second hopper means to a discharge end thereof; a second conveyor means extending from said discharge end of said second hopper means to said first hopper means; the actuation of said first and second conveying means and said actuating means for said first hopper means being responsive to the weight of material sensed by said weigh means whereby when the system is in operation the conveyors are operated to discharge material into said first hopper until said predetermined weight is sensed which in response thereto said actuating means actuates said first hopper means to dumping position and said first and second conveying means become inoperative while said first hopper is in a non-loading position.

4,337,695

FILTER PRESS WITH PIVOTING DIVERTER DOORS

W. Richard Clendaniel, Andover, Mass., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 26, 1981, Ser. No. 228,800
Int. Cl.³ B01D 25/12
U.S. Cl. 100—195 4 Claims



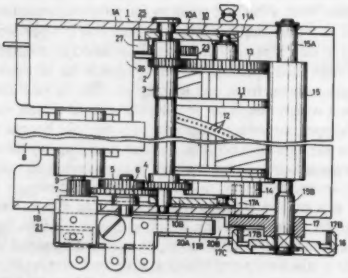
1. A filter press comprising: pressing members for pressing the liquid out of a slurry of a solid in a liquid to form a solid cake; means for separating the pressing members to release the cake; washing means located to flow water against the pressing members; a pair of diverter doors located below the pressing members and washing means, said diverter doors being pivotally mounted with one diverter door having a portion thereof overlapping the other diverter door in the closed position, and means for pivoting the overlapping diverter door from the closed position in a first rotational direction and then in the opposite rotational direction while simultaneously pivoting the other diverter door in said first rotational direction to allow dropping said solid cake through the open diverter doors.

4,337,696

PRINTING APPARATUS

Fumito Komatsu, Shiojiri, and Tadashi Kamijima, Shimosuwa, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Aug. 14, 1980, Ser. No. 177,964
Claims priority, application Japan, Apr. 17, 1980, 55-50628
Int. Cl.³ B41J 3/08
U.S. Cl. 101—93.04 8 Claims



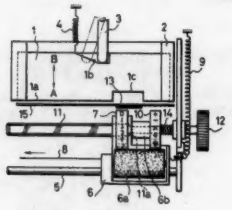
1. A printing apparatus comprising;
a motor producing a rotational drive torque,
torque transmission means,
a drive wheel fixedly mounted on a rotary shaft and driven by the rotation drive torque through said torque transmission means, said drive wheel being rotated in one direction,
a base frame rotatably supporting said rotary shaft,
a swingable support plate swingably supported to said rotary shaft,
a printing drum rotatably supported to said swingable support plate and having at one end a first circumferential torque transmission part engaged with said drive wheel,
printing web feeding means for feeding a printing web so as to face the circumferential surface of said printing drum, said printing web feeding means having a rotational axis parallel to the rotational axis of said printing drum,
biasing means for biasing said printing drum in the opposite direction to the printing web to be fed, and
forcible stopping means for selectively preventing said printing drum from rotating around its own axis, and to simultaneously effect printing,
said one direction of rotation of said drive wheel being determined such that, when said forcible stopping means is operative to prevent rotation around the axis of said printing drum caused by rotational torque transmitted from said drive wheel, said printing drum is rotated around only said rotary shaft toward said printing web in a sun-and-planet motion to effect printing by rotational torque transmitted from said drive wheel.

4,337,697

SERIAL PRINTER

Masatsugu Aoki, Yokohama, and Yasuhiko Iwane, Tamayama, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,528
Claims priority, application Japan, Dec. 30, 1978, 53-164159
Int. Cl.³ B41J 9/08
U.S. Cl. 101—93.48 10 Claims



1. A serial printer comprising first and second type wheels mounted on a rotary shaft for axial movement into a printing position along a printing line and carrying a plurality of respective type elements positioned at said printing line by rotation of said shaft, a single hammer lying along said entire printing line and having a recess formed opposite a non-printing position on said printing line, means for placing said second type wheel in said non-printing position so as to be opposite said recess whenever type elements from said first type wheel are selected for printing and placing said first type wheel in said non-printing position so as to be opposite said recess whenever type elements from said second type wheel are selected for printing, means for moving said hammer towards said type wheels for printing a character corresponding to the selected type element, and a mask member held in position between said recess and said non-printing position.

4,337,698

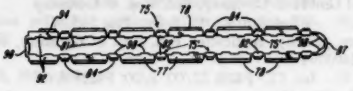
ENDLESS PRINTING BAND

William A. Jenkins, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 960,911, Nov. 15, 1978, Pat. No. 4,265,174.
This application Oct. 14, 1980, Ser. No. 196,925
Int. Cl.³ B41J 1/20
U.S. Cl. 101—111 8 Claims

1. A flexible endless printing band adapted for use in a print head of a label dispensing apparatus, the printing band comprising two series of first pads, the first pads having outwardly

projecting printing characters, a first link portion connecting each pair of adjacent first pads, a pair of adjacent second pads each being of a length shorter than each first pad, the second pads having outwardly projecting printing characters, a second flexible link portion longer than a said first link portion,



the second link portion connecting adjacent second pads, each second pad being connected to one series of first pads by a said first link portion, and the combined lengths of a pair of adjacent first pads and the intervening first link portion being substantially equal to the combined lengths of the pair of adjacent second pads and the intervening second link portion.

4,337,699

DEVICE FOR AXIALLY RECIPROCATING AN INKING-UNIT ROLLER

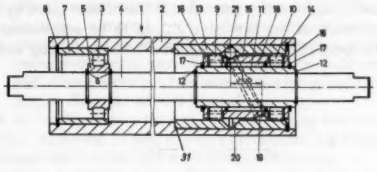
Hermann Beisel, Walldorf, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,763

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931141

Int. Cl.³ B41F *1/46*

U.S. Cl. 101—348 **4 Claims**



1. Device for axially reciprocating a printing-unit roller having a stationary shaft and a roller jacket rotatably driven by friction drive, the device being disposed within the printing-unit roller and being driven by rotational movement of the printing-unit roller, comprising drive means for effecting axial reciprocation of the printing-unit roller at a speed reduced with respect to the rotational speed of the printing-unit roller including two roller bearings disposed within the printing-unit roller between the roller jacket and the shaft, a first bushing also disposed within the roller between the roller jacket and the shaft and formed with cutouts through which said roller bearings extend, as well as with a first groove, a second bushing fixed in the roller jacket and formed with a second groove, one of said grooves being of elliptic form, said first bushing being revolvable as a cage and a ball being received simultaneously in both of said grooves and being rollable therein.

4,337,700

BLANKET CYLINDER CONSTRUCTION FOR PRINTING PRESS

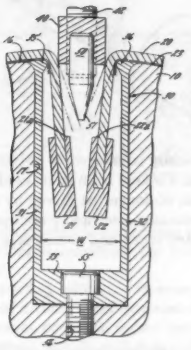
Gordon Etchell, Downers Grove, and Cyril W. Frank, Brookfield, both of Ill., assignors to Pathfinder Graphic Associates, Inc., Cicero, Ill.

Filed May 30, 1980, Ser. No. 154,540

Int. Cl.³ B41F *1/28*

U.S. Cl. 101—415.1 **1 Claim**

1. In a printing press a blanket cylinder having a longitudinal groove of rectangular section and of constant width and depth formed in the surface thereof, an insert of rectangular "U"-shaped cross section dimensioned to seat in the groove flatly with respect to the bottom and side walls of the groove, a blanket having reinforcing bars secured to its ends, the reinforcing bars being received in the insert and extending longitudinally along the inner walls thereof so that the reinforcing bars present, along their inwardly facing sides, upwardly facing ledge surfaces spaced parallel to one another, a longitudinal clamping bar dimensioned to bridge and clampingly seat upon the ledge surfaces and a series of radially oriented cap screws spaced along the length of the groove, the cap screws penetrating the clamping bar and insert and threaded into holes at the bottom of the groove so that upon uniform tightening of the cap screws the reinforcing bars are drawn downwardly toward the bottom of the groove thereby uniformly tensioning the blanket, the clamping bar having, extending radially from its underside, a plurality of wedge elements spaced between



adjacent ones of the clamping screws for the purpose of wedging apart the ends of the blanket and the attached reinforcing bars to prepare for entry therebetween of the clamping bar into seated position on the reinforcing bars, the insert having integral flanges along its outer edges over which the ends of the blanket are bent at right angles tending to hold the insert captive along its length against centrifugal dislodgement, the flanges extending mutually inwardly so that the gap defined by the flanges is less than the internal width dimension of the insert and just large enough to comfortably accommodate the heads of the cap screws between the bent-over ends of the blanket thereby to enable use of the blanket cylinder with a plate cylinder having a narrow gap and a maximum of printing area.

4,337,701

ELECTROMECHANICAL WARHEAD SAFETY-ARMING DEVICE

James G. Janson, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 115,989

Int. Cl.³ F42C *15/24, 15/34*

U.S. Cl. 102—249 **4 Claims**

1. A warhead safety-arming device comprising:

a pair of rotors side by side with meshed geared surfaces, said rotors having centers of gravity such that said rotors are driven in opposing directions due to inertial effects on said centers of gravity;

a setback weight attached to one of said rotors for locking in a predetermined position said rotor pair, whereby said rotor pair is free to turn upon depression of said setback weight by a predetermined acceleration;

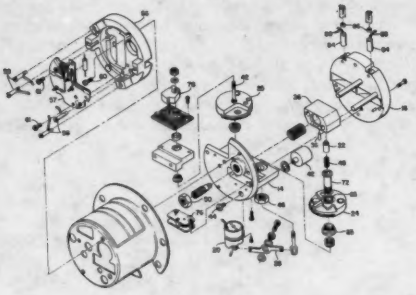
a solenoid assembly connected to said rotors;

a clevis latch pin mounted so it fits into said setback weight for holding said setback weight in position;

a bellcrank connecting said solenoid assembly and said clevis latch pin for withdrawing said clevis latch pin from said setback weight when said solenoid assembly is activated;

a releasing means connected to said solenoid assembly for unlocking said setback weight;

an escapement engaged to one of said rotors for timing the period said rotor pair is driven when said setback weight is depressed;



a switch electrically connected to at least one of said rotor pair such that it is kept from an on configuration until said rotor pair can no longer be driven by inertia; and

at least one detonator electrically connected to said switch which is armed when said switch is in said on configuration.

4,337,702

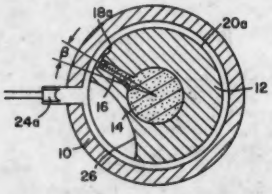
ELECTROEXPLOSIVE AND PERCUSSION SAFE AND ARM DEVICE

Robert E. Betts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1980, Ser. No. 158,009

Int. Cl.³ F42C *15/34*

U.S. Cl. 102—254 **5 Claims**



1. In a safe and arming device having an outer housing with an inner core structure mounted for movement of the outer housing and the core structure relative to each other and with a pressure squib mounted on the outer housing for exerting pressure on a burst disk that is mounted on said core structure and with charge means mounted in the core structure for being ignited and set off by the pressure squib when sufficient pressure from the pressure squib is applied to the burst disk, the improvement comprising: said burst disk being replaced by a percussion cap and said pressure squib being replaced by a squib charge that applies force linearly toward a specific area to apply force to the face of said percussion cap to cause said percussion cap to be set off and thereby said charge means.

4,337,703

PROCESS AND ARRANGEMENT FOR GUIDING THE EFFECT OF UNDERWATER DETONATIONS OF UNDERWATER EXPLOSIVE BODIES

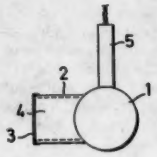
Hartmut Schöner, Bonn, Fed. Rep. of Germany, assignor to Diehl GmbH & Company, Fed. Rep. of Germany

Filed Jan. 22, 1975, Ser. No. 543,247

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1974, 2403791

Int. Cl.³ F42B *22/00, 3/00;* F42D *3/00*

U.S. Cl. 102—406 **4 Claims**



1. Apparatus for guiding and increasing the effect of underwater detonation of an underwater explosive body, comprising

(a) an underwater explosive body (1) adapted to be submerged in a body of water adjacent a target;

(b) means (2) including a separate rigid generally cylindrical hollow wall rigidly secured at one end to said explosive body for defining a hollow space on the side of said explosive body facing the target; and

(c) means (5) for detonating said explosive body to cause the gases of high density generated in the hollow space by the detonation of the explosive charge to be accelerated to high speeds prior to meeting with the surrounding water.

4,337,704

TURBULENT-WATER WAY

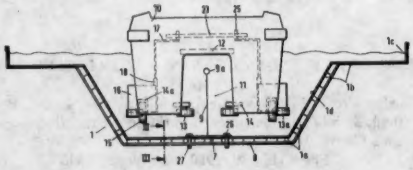
Klaus Becker; Jurgen Cittrich, and Karl E. Kaufmann, all of Wetter, Fed. Rep. of Germany, assignors to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,895

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921629

Int. Cl.³ A63G *21/18*

U.S. Cl. 104—70 **10 Claims**



1. A trough for a turbulent waterway comprising:

(a) a bottom surface constructed of bar grating;

(b) two side walls constructed of bar grating;

(c) said side walls being loosely connected to said bottom surface and extending upwardly therefrom; and

(d) said bottom surface and said side walls having an overlying synthetic film for providing a watertight environment.

4,337,705

RESILIENTLY INTERCONNECTED PIVOTED TRUCKS

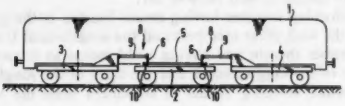
Rudolf Schellenberg, Effretikon, Switzerland, assignor to Schweizerische Lokomotiv und Maschinenfabrik, Winterthur, Switzerland

Filed Apr. 3, 1978, Ser. No. 892,880

Claims priority, application Switzerland, Feb. 10, 1978, 1499/78

Int. Cl.³ B61F 5/00, 5/38, 13/00

U.S. Cl. 105—168 10 Claims



1. In a cross-coupling arrangement for coupling at least two trucks of a rail vehicle; the combination including

a shaft having a coaxial cavity at each end thereof; mounted in a respective cavity of said shaft;

a pair of journal pins, each pin having a conical part and a cylindrical threaded part at one end, each pin being secured to a respective bearing and projecting from said shaft to permit mounting of said shaft on an axis of rotation longitudinally of said shaft;

a pair of levers each lever being fastened to one end of said shaft and arranged at least approximately in the proximity of the transverse plane of said universal bearing at said end of said shaft;

a pair of support brackets for mounting on one of a vehicle body and a central truck of the rail vehicle; and

a clamping sleeve in each respective bracket receiving a respective conical part of a journal pin in mating relation, said sleeve having an outside diameter greater than the largest diameter of said journal pin.

2. In combination with a rail vehicle having two trucks and a body supported on said trucks; a cross-coupling arrangement between said trucks, said arrangement including

a shaft extending longitudinally of said vehicle, said shaft having a coaxial cylindrical cavity at each end;

a pair of universal bearings, each universal bearing being mounted in a respective cavity of said shaft;

a pair of support brackets mounted on said body;

a pair of journal pins, each pin being secured in a respective mounting bracket in fixed relation and projecting into a respective cavity of said shaft and secured to a respective universal bearing to permit rotation and angular movement of said shaft relative to said pins; and

a pair of linkages, each said linkage connecting a respective end of said shaft with a respective one of said trucks, each linkage including a lever fastened at one end of said shaft and arranged at least approximately in the proximity of a transverse plane of said universal bearing at said end of said shaft.

7. In combination with a rail vehicle having three trucks; a cross-coupling arrangement between said trucks, said arrangement including

a shaft extending longitudinally of said vehicle, said shaft having a coaxial cylindrical cavity at each end;

a pair of universal bearings, each universal bearing being mounted in a respective cavity of said shaft;

a pair of support brackets mounted on a middle one of said trucks;

a pair of journal pins, each pin being secured in a respective mounting bracket in fixed relation and projecting into a respective cavity of said shaft and secured to a respective universal bearing to permit rotation and angular movement of said shaft relative to said pins; and

a pair of linkages, each said linkage being fastened to a respective end of said shaft to connect said one end of said shaft with a respective outer one of said trucks, each linkage including a lever fastened to one end of said shaft and arranged at least approximately in the proximity of a transverse plane of said universal bearing at said end of said shaft.

4,337,706

RAILWAY LOCOMOTIVE

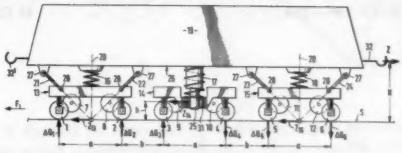
Hugo Loosli, Winterthur, Switzerland, assignor to Schweizerische Lokomotiv und Maschinenfabrik, Winterthur, Switzerland

Continuation of Ser. No. 964,379, Nov. 28, 1978, abandoned. This application Dec. 12, 1980, Ser. No. 215,760

Claims priority, application Switzerland, Nov. 30, 1977, 14637/77

Int. Cl.³ B61C 15/14; B61F 3/04, 5/18, 5/22

U.S. Cl. 105—184 12 Claims



1. A track propulsion vehicle comprising a

vehicle body having a drawhook for transmitting a total traction force;

three trucks supporting said body thereon, each said truck having a pair of driving axles mounted therein;

a plurality of motors, each said motor being drivingly connected to a respective axle, said motors being disposed in two parallel electrically connected groups with one group comprising the motors of the three successive axles leading in a direction of travel and the other group comprising the motors of the three successive trailing axles, each said motor group being operable to deliver different power from the other motor group to said respective axles; and

means connecting each respective truck to said body for transmitting a traction force therebetween, said means of the two outer trucks equalizing the load on said driving axles thereof and said connecting means of the middle truck defining a theoretical point of attack for a traction force thereat at a predetermined height above a rail upper surface, said height corresponding to a predetermined moment produced in the transmission of said latter traction force, said moment relieving the load on the leading axle of said middle truck and increasing the load on the trailing axle of said middle truck.

6. A track propulsion vehicle comprising

a vehicle body having a drawhook at a given height above a plane coincident with a rail upper surface for transmitting a total traction force;

three trucks supporting said body thereon, each said truck having a pair of driving axles mounted therein, said axles of each said pair of axles being spaced a first distance apart from each other and said pairs of axles being spaced a second distance from an adjacent pair of axles;

a plurality of motors, each said motor being drivingly connected to a respective axle, said motors being disposed in two parallel electrically connected groups with one group comprising the motors of the three successive axles leading in a direction of travel and the other group comprising the motors of the three successive trailing axles, each said motor group being operable to deliver different power from the other motor group to said respective axles; and

means connecting each respective truck to said body for transmitting a traction force therebetween, said means of the two outer trucks equalizing the load on said driving axles thereof and said connecting means of the middle truck defining a theoretical point of attack for a traction force thereat at a predetermined height above said plane,

said height corresponding to a predetermined moment produced in the transmission of said latter traction force, said moment relieving the load on the leading axle of said middle truck and increasing the load on the trailing axle of said middle truck.

4,337,707

RAILWAY HOPPER CAR BOGIE

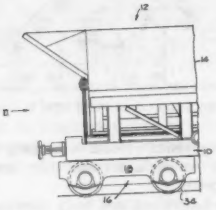
Cornelis Brouwer, Potchefstroom, South Africa, assignor to Rotaque (Proprietary) Limited, Potchefstroom, South Africa

Continuation of Ser. No. 874,180, Feb. 1, 1978, abandoned, which is a continuation of Ser. No. 760,799, Jan. 19, 1977, abandoned. This application Feb. 20, 1980, Ser. No. 122,974

Claims priority, application South Africa, Jan. 28, 1976, 76/0485

Int. Cl.³ B61D *7/04;* **B61F** *5/04, 5/14, 5/52*

U.S. Cl. 105—250 **18 Claims**



1. A wheeled rail vehicle comprising

(a) a base frame which is of elongated rectangular form in plan view;

(b) a hopper supported on said base frame, said hopper having a discharge opening at the bottom thereof which opening is elongated in the direction of elongation of said base frame, which extends continuously over substantially the entire length of said frame, and which is arranged so that the load carried in said hopper, upon being discharged, falls through said base frame;

(c) a pair of bogie frames on which wheels of said vehicle are mounted, said bogie frames being located beneath opposite ends of said base frame, each bogie frame being U-shaped in plan view and comprising two spaced side members joined by a transverse member, said side members of each bogie frame extending away from said transverse member of that bogie frame towards the center of said vehicle;

(d) bearing structures between said base frame and each bogie frame and forming means which support said base frame on said bogie frames and permit relative pivoting movement between the base frame and the bogie frames about respective vertical axes, said bearing structures being radially spaced horizontally from the respective vertical axes about which said bogie frames and base frame can perform relative pivoting motion; and

(e) means for limiting pivoting motion and separation of said bogie frames and base frame relatively to one another about said axes.

4,337,708

RAILWAY CAR SUPERSTRUCTURE FRAME

William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 11, 1980, Ser. No. 139,514

Int. Cl.³ B23K *31/00;* **B23P** *15/00;* **B61D** *17/08*

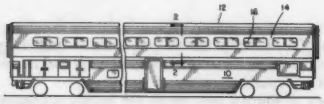
U.S. Cl. 105—397 **11 Claims**

1. A welded structural frame for a railway car wall which displays low distortion during and after assembly comprising:

a longitudinal U-section member forming part of a side wall frame and having a pair of opposed, horizontal sides and having a vertical base interconnecting said horizontal sides, said U-section member also having an outer surface disposed in a generally vertical plane to facilitate attachment of an outer wall sheath;

a pair of aligned, wall pillar members fitted about the U-shaped member with one abutting each of the sides of the longitudinal member and being welded thereto and said pillar members having an outside, flat section in alignment with and in a vertical plane with the outer surface of the longitudinal U-section member thereby providing a smooth, continuous surface for attachment of an outer wall sheath to said railway car;

a reinforcing member having means located at the juncture of the wall pillar members and the longitudinal U-section member therein and having weld means to interconnect the reinforcing member and the sides of the longitudinal member forming means in alignment with the vertical



pillar members to thereby provide a continuous, structural wall pillar member extending through the longitudinal member for improved rigidity and dimensional stability.

9. A method of constructing a low distortion welded structural frame for a railway car wall comprising:

a first step of welding a pair of aligned wall pillar members to opposite sides of a U-shaped longitudinal member having a pair of horizontal sides interconnected by a base and aligning the outer portions of the wall pillar members and the longitudinal member in a common plane to facilitate attachment of an outer wall sheath for said railway car;

a second step of positioning a reinforcing member between the sides of the longitudinal member in alignment with the wall pillar members; and

a third step of welding the reinforcing member to the sides of the longitudinal member in position to provide a continuous framing member extending across said railway car.

4,337,709

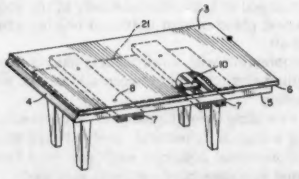
WALL STORABLE TABLE ATTACHMENT TOP

James A. Nicholson, 10600 Van Stralen Way, Rancho Cordova, Calif. 95670

Filed Jan. 20, 1978, Ser. No. 871,102

Int. Cl.³ A47B *33/00*

U.S. Cl. 108—33 **3 Claims**



1. A storable table attachable top comprising, a generally rectangular planar top member, said top member being attached by its base to the upper surface of a generally rectangular base frame with the edges of said top member extending beyond said base frame on three sides thereof, the fourth edge of said top member being flush with the top of a side of said base frame, said side of said base frame being provided with a lateral projection with a recess therein, said recess providing a curved downwardly extending back wall culminating at one end of the base frame to form a finger grip; means for providing an anchorage for clamping devices, said means being at-

tached to the bottom of said base frame; magnetic holding means comprising a plurality of spacers, each said spacer being provided with a magnetically attractable plate on the outer surface and having an inner surface attached to the bottom of said base frame, each said spacer having a height sufficient to space the magnetically attractable plate further from the base frame than the height of said means of providing for the anchorage for clamping devices.

4,337,710

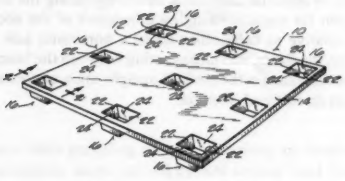
PALLETS MOLDED FROM MATTED WOOD FLAKES

Bruce A. Haataja, Lake Linden; Tauno B. Kilpela, Atlantic Mine; Anders E. Lund, and James F. Hamilton, both of Houghton, all of Mich., assignors to Michigan Technological University, Houghton, Mich.

Division of Ser. No. 972,034, Dec. 21, 1978. This application Jul. 2, 1980, Ser. No. 165,393

Int. Cl.³ B65D *19/24*

U.S. Cl. 108—53.3 8 Claims



1. A pallet comprising

a generally flat, rectangular deck member having a major plane and a flat upper surface; and

a plurality of parallel rows of spaced, hollow leg members projecting integrally from said deck member, said leg members in each of said rows being laterally aligned with a said leg member in the adjacent row, each of said leg members having a bottom wall spaced from said deck member a sufficient distance to permit entry of fork lift tines beneath said deck member and opposed pairs of side walls integrally connecting said bottom wall with said deck member and inclining outwardly from said bottom wall toward said deck member;

said deck and leg members being molded as a one-piece unit from a layered mixture of a resinous particle board binder and flake-like wood particles having an average length of about 1¼ to about 6 inches, an average thickness of about 0.005 to about 0.075 inch, and an average width of about 3 inches or less and no greater than the average length, each layer of said wood particles forming at least said deck member lying substantially flat in a plane generally parallel to the major plane with said wood particles therein being randomly oriented.

4,337,711

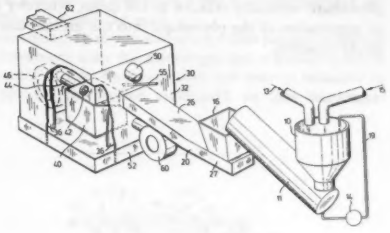
METHOD FOR COMBUSTION OF PETROLEUM AND SOLID WASTES

Clifford Bolton, 1094 Third Line, Oakville, Ontario, L6L 4B1, Canada

Filed Sep. 22, 1980, Ser. No. 189,268

Int. Cl.³ F23G *7/00*

U.S. Cl. 110—346 9 Claims



1. A method for controllably combusting liquid petroleum wastes which comprises mixing particulate combustible solids with said liquid petroleum wastes in a ratio within the range of about 30:70 to 75:25 by volume liquid petroleum wastes to particulate combustible solids and feeding said mixture of liquid petroleum wastes and particulate solids at a controlled rate to a combustion chamber for combustion therein.

4,337,712

INJECTION PLOW

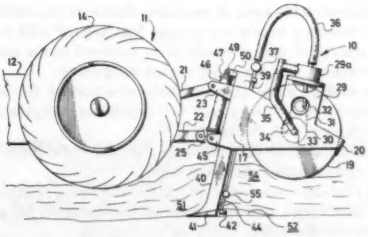
Jan Michalko, Bratislava, Czechoslovakia, assignor to Jednotne reolnicke druzstvo, Modra, Czechoslovakia

Continuation-in-part of Ser. No. 929,953, Aug. 1, 1978, abandoned. This application Aug. 6, 1980, Ser. No. 175,876

Claims priority, application Czechoslovakia, Aug. 1, 1977, 5062-77

Int. Cl.³ A01C *23/02*

U.S. Cl. 111—7 5 Claims



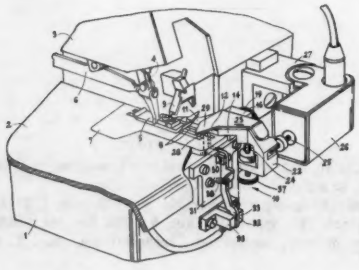
1. A fertilizer injection plow for underground fertilization by a fluid fertilizer, said plow being adapted for mounting on a ground traversing vehicle, comprising a frame, a ground-engaging fertilizer-storing drum mounted on the frame for rotation by ground contact, a pump mounted on the frame and having an inlet and an outlet port, means drivingly connecting

the pump to the drum so that the pump is driven by the drum in synchronism therewith, a first conduit means connecting the inlet port of the pump to the interior of the drum, a plowshare, a liquid injecting nozzle mounted adjacent the plowshare, and a second conduit means connecting the outlet port of the pump to the injecting nozzle, whereby engagement between the drum and the ground determines the depth of penetration of the plowshare into the ground, and means for adjusting the plowshare vertically relative to the drum, whereby the depth of penetration of the plowshare into the ground can be selectively adjusted.

4,337,713
INVISIBLE STITCH HEMMING FOR TUBULAR MATERIAL

Giovanni Palacino, Via Dei Giacinti 12, Milan; Gianfranco Garzulano, Via F. Cavallotti 13, Novara, and Adelmo Garagiola, Via Cavour 41, Inveruno, Milan, all of Italy

Filed Aug. 6, 1980, Ser. No. 175,613
Claims priority, application Italy, Sep. 25, 1979, 25966 A/79
Int. Cl.[3] D05B *35/04, 35/10*
U.S. Cl. 112—153 **6 Claims**



1. A hemming device for forming invisible stitches in tubular workpieces with areas of increased thickness in a sewing machine having a needle and presser foot aligned with a sewing axis associated with a needle plate mounted in the machine's worksurface, said hemming device comprising:

(a) a straight guide (**11**) pivotably mounted on the machine adjacent the sewing axis for maintaining alignment of a workpiece with the latter;

(b) a hemmer plate (**23**) pivotably attached to the upper surface of said straight guide including:

(i) a tip (**29**) disposed in spaced and overlying relation to the needle plate defining a passage therebetween for advance of the workpiece along the sewing axis;

(c) means defining a feeler (**28**) pivotably mounted on the machine in operative association with said passage for detecting those areas of a workpiece of increased thickness;

(d) actuator means operatively connected to said feeler (**28**) for displacing said straight guide (**11**) upon detection of areas of increased thickness of the workpiece; and

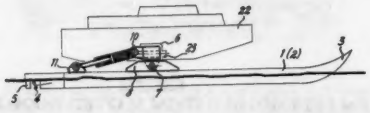
(e) means forming a part of said straight guide (**11**) for maintaining the workpiece in alignment with the sewing axis after its displacement by said actuator means.

4,337,714
Patent Not Issued For This Number

4,337,715
ARTICULATED CATAMARAN

Pierre J. de Pingon, 7 avenue du Parmelan, 74000 Annecy, France

PCT No. PCT/FR79/00046, § 371 Date Feb. 8, 1980, § 102(e) Date Feb. 5, 1980, PCT Pub. No. WO80/00018, PCT Pub. Date Jan. 10, 1980
PCT Filed May 31, 1979, Ser. No. 194,300
Int. Cl.[3] B63B *1/22*
U.S. Cl. 114—121 **6 Claims**

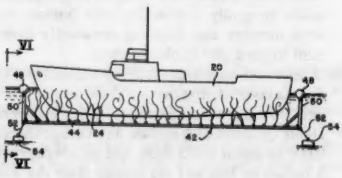


1. In a catamaran comprising two elongated floats each having a longitudinal axis, a beam extending between and interconnected at its ends to said floats for vertical swinging movement of said floats relative to said beam about a horizontal axis perpendicular to said longitudinal axes, and a cockpit mounted on said beam; the improvement comprising links pivotally interconnecting each end of the beam and the associated float, means for altering the lengths of said links simultaneously in opposite directions, means mounting the cockpit on the beam for vertical swinging movement of the cockpit and beam relative to each other about a horizontal axis disposed between the floats, and means acting between the beam and the cockpit to maintain the cockpit upright upon movement of the beam to an inclined position.

4,337,716
MARINE GROWTH WIPER

Jack Harris, 4460 ½ Utah St., San Diego, Calif. 92116

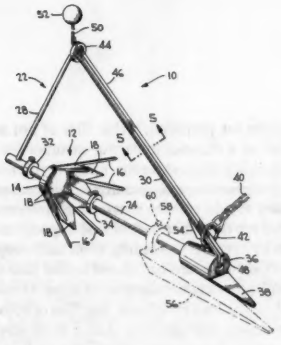
Filed Mar. 24, 1977, Ser. No. 780,749
Int. Cl.[3] B63B *59/00*
U.S. Cl. 114—222 **16 Claims**



1. A marine growth wiper for a waterborne object comprising:

a plurality of cords which are limp;
negatively buoyant underwater support means for positioning the cords below the waterline and within wiping distance of a submerged surface area of the waterborne object; and
said cords being positively buoyant so as to stream upwardly from the underwater support means and move responsively to water action to wipe the bottom of the object free of marine growth.

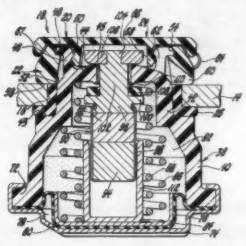
4,337,717
REVERSIBLE GRAPPLING ANCHOR
Clarence T. Gregory, 11 Pelham Heights, Anniston, Ala. 36201
Filed Apr. 28, 1980, Ser. No. 144,413
Int. Cl.[3] B63B *21/24, 21/46*
U.S. Cl. 114—294 8 Claims



1. A reversible grappling anchor comprising an anchor head, bottom engaging means carried by said anchor head for interlocking engagement with a bottom of a body of water, a generally triangular frame including a lower sliding bar and an upstanding reversing bar connected to opposite ends of said sliding bar, said sliding bar being connected to said head for sliding movement therethrough, said reversing bar includes a front portion and a rear portion, and an anchor cable slip ring slidably mounted on said reversing bar rear portion for movement between an anchor support upper position and a tension applying lower position, and a float and cable assembly coupled to said slip ring for pulling said slip ring to said lower position when an associated anchor cable is slack.

4,337,718
LOW TIRE PRESSURE TRANSDUCER
John A. Stewart, Flint, and Wayne C. Nichols, Corunna, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jul. 28, 1980, Ser. No. 173,032
Int. Cl.[3] B60C *23/02*
U.S. Cl. 116—34 R 2 Claims

1. A low tire pressure transducer for emitting a magnetic signal when tire pressure falls below a set value comprising
a housing,
means engaging the housing for retaining the housing on a tire rim,
a diaphragm extending across the housing to separate the housing into first and second chambers, the second chamber being subject to a pressure buildup due to leakage,
vent means in the housing for supplying tire pressure to the first chamber,
a valve comprising a port in the housing connecting the second chamber to atmosphere and a closure member for selectively closing the port,
magnetic signalling means including a first portion mounted for movement with the diaphragm and a second portion connected to the closure member and loosely mounted to the housing for limited movement, so that diaphragm



movement can selectively separate and move the portions together,
one of the portions comprising a magnet assembly for producing a magnetic flux,
the other of the portions comprising a magnetic shunt for containing at least part of the magnetic flux when the diaphragm moves the portions together to thereby subdue magnetic flux emitted from the transducer, and
spring means in the second chamber acting along with air pressure in the second chamber against the diaphragm for momentarily moving both portions and opening the valve to relieve pressure buildup when it occurs and for separating the first and second portions when tire pressure falls below the preset value, whereupon the shunt is moved away from the magnet to permit magnetic flux to be emitted from the transducer.

4,337,719
MANDREL SUPPORT MEANS FOR CONTAINER DECORATING APPARATUS
Pieter S. vander Griendt, Bernardsville, N.J.; Robert W. Tielrooy, Amstelveen, Netherlands, and Edward J. Russell, Gladwin, Mich., assignors to Van Dam Machine Corporation of America, West Paterson, N.J.
Filed Apr. 16, 1981, Ser. No. 254,807
Int. Cl.[3] B05C *11/00*
U.S. Cl. 118—46 7 Claims

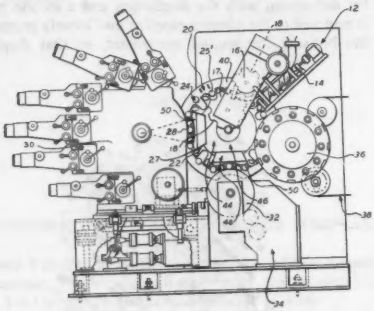
1. In an apparatus for the continuous decoration of containers, a mandrel wheel assembly comprising:
A. a substantially circular rotatable mandrel wheel,
B. a plurality of mandrel assemblies pivotally mounted on the circumferential periphery of said mandrel wheel, said mandrel assemblies extending parallel to the axis of rota-

tion of said mandrel wheel and in the same direction with respect to each other,

C. a central stationary shaft extending through said mandrel wheel at its axis of rotation, and

D. a secondary mandrel support means mounted about said shaft in spaced apart relation to said mandrel wheel, said secondary mandrel support means comprising;

a. a planar support member mounted nonrotatably about said shaft, and



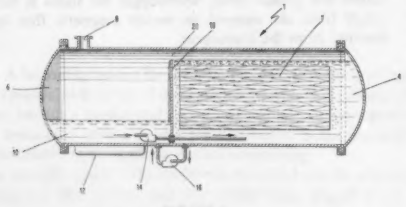
b. at least one planar support cam extending radially from said support member, said support cam defining a camming surface radially removed from said support member, said support cam adapted to cammingly engage said mandrel assemblies along a portion of their axial lengths to support said mandrels when said mandrels are engaged in a coating operation.

4,337,720

APPARATUS FOR TREATMENT OF WOOD

Bror O. Häger, Forsetevägen 5, S182 63 Djursholm, Sweden

Filed Nov. 10, 1980, Ser. No. 205,187
Claims priority, application Sweden, Nov. 13, 1979, 7909340
Int. Cl.³ B05C 3/109
U.S. Cl. 118—50 **6 Claims**



1. An apparatus for the treatment of wood comprising:

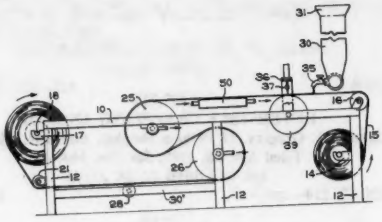
a vessel, said vessel including a storage chamber for the storage of treatment liquid and a treatment chamber wherein wood can be contacted with said treatment liquid, said vessel further including means to exclude ambient air from the interior of the vessel, said storage chamber and said treatment chamber being separated by a substantially vertical intermediate wall portion which includes means to permit communication between the storage chamber and the treatment chamber to equalize the pressure in each chamber, said communication means further enabling said treatment liquid in said treatment chamber to flow into said storage chamber upon achieving a desired level in said treatment chamber.

4,337,721

PROCESSING HOT MELT ADHESIVE

Richard S. Varga, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 27, 1978, Ser. No. 890,449
Int. Cl.³ B05C 5/00
U.S. Cl. 118—60 **1 Claim**



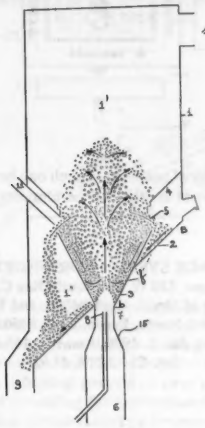
1. An apparatus for preparing a thin film of hot melt adhesive for deposit on a disposable carrier member for stripping therefrom comprising support means, a supply roll mounted on one end of said support means, said disposable carrier member rolled up on said supply roll for unwinding therefrom, a take-up roll mounted on the other end of said support means, said disposable carrier member extending from said supply roll to said take-up roll, drive means connected to said take-up roll for rotating said roll, an extruder mounted adjacent to said one end of said support means for extruding a thin film of adhesive onto said carrier member, said extruder has a feed screw that is located in a vertical direction for depositing its feed onto said carrier member, cooling means mounted on said support means for direct contact with said carrier member for cooling said hot melt adhesive as said adhesive moves with said carrier member from said supply roll to said take-up roll, control means mounted on said support means between said cooling means and said extruder, said control means cooperative with said carrier member to regulate the thickness of deposit of said hot melt adhesive passing toward said cooling means with said carrier member, said carrier member being a disposable silicone roll of paper, said extruder having a plurality of laterally spaced discharge valves for spreading the output of said extruder across said carrier member, said control means includes a back-up roller operative to contact the underside of said carrier member, an elongated blade extending across said carrier member opposite said back-up roller for regulating the amount of hot melt adhesive passing underneath said blade for deposit onto said carrier member, said cooling means includes a pair of cooling rollers upon which said carrier member is trained as it moves past said blade to said take-up roll, cooling means connected to said pair of cooling rolls for removing heat from said carrier member and said hot melt adhesive, said cooling means includes an elongated cooling box operative to support said carrier member as said carrier member passes from said control means to said take-up roll, and said pair of rollers are located on said support means to direct said carrier member into an S-shaped loop to expose said carrier member directly to the first one of said pair of cooling rollers and thence expose said hot melt adhesive directly to the remaining one of said pair of cooling rollers.

4,337,722

APPARATUS FOR GRANULATING AND/OR COATING PARTICLES IN A SPOUTED BED

Christian Debayeux, Toulouse; Hubert Lacroix, Villeneuve Tolosane, and Felix Sternicha, Toulouse, all of France, assignors to Societe Chimique des Charbonnages, Paris, France

Filed Dec. 1, 1980, Ser. No. 212,046
Claims priority, application France, Nov. 30, 1979, 79 29462
Int. Cl.³ B01J 2/16; B05C 5/00
U.S. Cl. 118—303 5 Claims



1. An apparatus for granulating and/or coating solid particles in a spouted bed comprising: a downwardly converging frustoconically shaped hollow body having a hollow cylindrically shaped body mounted coaxially around and extending upward therefrom, said hollow cylindrically shaped body having an outlet connected thereto for appropriately shaped granules; a gas feed conduit coaxially attached to said frustoconically shaped hollow body at the bottom smaller end thereof; a spray nozzle positioned coaxially within said gas feed conduit adjacent said bottom smaller end of said frustoconically shaped hollow body; a downwardly inclined recentering flange attached to the inside walls of said hollow cylindrically shaped body, said flange extending so as to overlap said frustoconically shaped body so as to define an annularly extending gap around the top edge of said frustonically shaped body and said flange for providing an outlet for finished granules; and an inclined bottom floor attached to said cylindrically shaped body and to the extension of said frustoconically shaped body for closing off the bottom of said cylindrically shaped body.

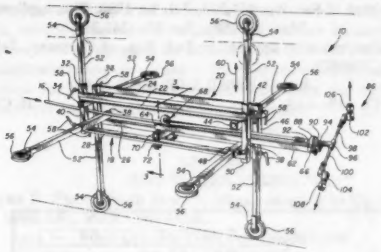
4,337,723

PIPE INTERIOR SURFACE COATING DEVICE

J. C. Davis, 9818 Hathaway, Dallas, Tex. 75220

Filed Dec. 15, 1980, Ser. No. 216,287
Int. Cl.³ B05C 7/02, 7/08
U.S. Cl. 118—306 8 Claims

1. A pipe interior surface coating device, comprising: a carriage adapted to be supported within a pipe near the longitudinal central axis of said pipe and to be moved longitudinally inside said pipe; and spray means for applying coating material to the interior surface of said pipe including bracket means mounted on said carriage and having one end thereof extending past a first end of said carriage, a rotating sprayer assembly mounted on said one end of said bracket for rotation about an axis essentially parallel to said central pipe axis, said rotating sprayer assembly comprising a swivel member at said axis of rotation, whirler tubes extending radially from said swivel member and nozzle means attached to the outer end of each whirler tube, and means to receive a supply of said coating material, said swivel member and said whirler tubes forming fluid conduits for delivery of said coating material from said receiving means to said nozzle means and means to adjustably position each nozzle means for discharge of said coating mate-



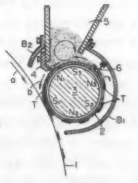
rial toward the interior surface of said pipe and at an angle relative to a radial line extending from the axis of rotation of said rotating sprayer assembly whereby impetus is provided to drive said assembly at a selected rotational speed.

4,337,724

DEVELOPING DEVICE

Nagao Hosono, Chofu; Junichiro Kanbe, Tokyo; Kozo Arao, and Nobuyuki Miyake, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 118,927
Claims priority, application Japan, Feb. 15, 1979, 54-17739
Int. Cl.³ G03G 15/09
U.S. Cl. 118—652 11 Claims



1. A developing device comprising:

developer holding means disposed with a minute gap with respect to a latent image bearing member for moving developer in a predetermined direction to a development station;

developer supply means for supplying developer to the surface of said developer holding means;

a scatter preventing cover to prevent scattering of developer removably attached to said developer supply means for covering at least a portion of said holding means at a location spaced downstream from the development station and upstream of said developer supply means with respect to the direction of movement of the developer;

control means for controlling the thickness of a developer layer on said developer holding means, said control means being positioned downstream of said supply means and upstream from the development station; and

a developer removing member attached to said cover and adapted to be in contact with the surface of said developer holding means to remove the developer on the surface of said developer holding means and to again impart the removed developer to the surface of said developer holding means at a position upstream of said developer supply means and downstream of the development station.

4,337,725

APPARATUS FOR COATING WIRES WITH INSULATOR

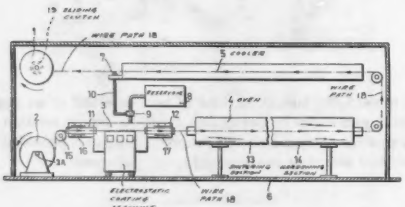
Wolfgang Voelker, Arolsen; Alfons Schmitt, Neuhof, and Fritz Radeck, Arolsen, all of Fed. Rep. of Germany, assignors to Felten & Guilleaume Carlswerk Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Division of Ser. No. 167,323, Jul. 10, 1980. This application Mar. 13, 1981, Ser. No. 243,340

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1979, 2930870

Int. Cl.³ B05B *5/02*; B05C *11/10*

U.S. Cl. 118—665 **10 Claims**



1. A device for continuously coating wire and the like elongated bodies with insulation or like coatings, comprising a reservoir for containing a pulverized insulator; an electrostatic coating machine having an inlet end and an outlet end for the wire and connection means to the reservoir to receive pulverized insulator therefrom, and operative for coating wire continuously passing therethrough with the insulator received from said reservoir by establishing a potential difference between the wire and the insulator, said machine being capable of applying a thickness of coating to the wire proportional to the rate of supply of insulator received by the machine from said reservoir, a sintering and hardening oven continuously receiving the coated wire from said electrostatic coating machine and continuously sintering and hardening the coating thereon; a cooler for continuously receiving the coated wire from said oven and cooling the coated wire; means for passing the wire with even speed through said electrostatic coating machine, said oven and said cooler; a thickness sensor downstream of said oven for continuously monitoring coating thickness after the coating has been sintered and hardened; and control means interconnected between said thickness sensor and said electrostatic coating machine for adjusting the rate of supply of the pulverized insulator into the electrostatic coating machine in dependence upon coating thickness, whereby coating thickness is maintained at a desired value within a predetermined tolerance.

4,337,726

ANIMAL ACTIVITY MONITOR AND BEHAVIOR PROCESSOR

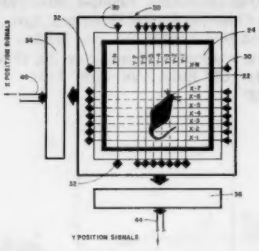
Jan A. Czekajewski, 4348 Shire Cove, Columbus, Ohio 43220; Harold L. Hill, 425 Rhoads Ave., Columbus, Ohio 43205, and Kenneth J. Kober, 595 S. James Rd., Columbus, Ohio 43213

Filed Jul. 7, 1980, Ser. No. 166,306

Int. Cl.³ A01K *45/00*

U.S. Cl. 119—1 **20 Claims**

1. An animal activity monitor and behavior processor comprising, in combination, means forming an observation area for containing an animal specimen; a plurality of spaced beams of radiation projected across said observation area, so as to be interrupted by the animal, as it moves within said area; a total activity counter for automatically recording each interruption of any of the plurality of beams; and an ambulatory counter that automatically records only the first interruption of any



one of the plurality of beams until such one beam is reactivated by an interruption of another of the plurality of beams.

4,337,727

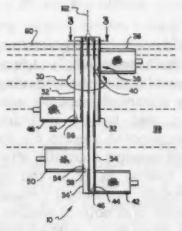
MODULAR CAGE SYSTEM FOR UNDERWATER USE

Roger W. Mickelsen, 132 W. 255 South; Rex C. Infanger, 595 N. 900 West, both of Orem, Utah 84057, and Richard A. Heckman, 603 E. 4300 North, Provo, Utah 84601

Filed Jul. 3, 1980, Ser. No. 165,493

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **15 Claims**



14. A method of constructing an aquatic vertical housing and feeding structure comprising the following steps and variations in the order thereof:

(a) tiering together a first plurality of feeding tubes, each having an open top end, in substantially parallel fashion, said tubes being oriented so that said top ends are substantially even with a top line normal to a longitudinal axis of each tube, thereby creating a first tier of feeding tubes;

(b) tiering together a second plurality of feeding tubes, each having an open top end, in parallel fashion, said tubes being oriented so that said top ends are substantially even with a top line normal to a longitudinal axis of each tube, each of said second plurality of tubes having a longer length than the longest of said first plurality of tubes, thereby creating a second tier of feeding tubes having a longer length than said first tier of feeding tubes;

(c) coupling said first tier of feeding tubes to said second tier of feeding tubes in an orientation that places said top ends of said tubes in both said first and second tiers substantially even with each other, and which further points a front face of each of said tiers in the same direction;

(d) detachably connecting a plurality of cages, each having a plurality of caged compartments therein, to exposed areas along said front faces of said first and second tiers;

(e) creating a feed opening along said front face of selected tubes of said tiers that is assessible from the inside of each of said caged compartments of said cages; and

(f) blocking each of said tubes at a point immediately below each of said openings.

4,337,728

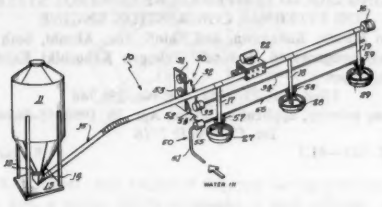
PROGRAMMED HOG FEEDER AND PROCESS

Carl Van Gilst; Howard S. Brembeck, both of Goshen, and Bradley E. Donahoe, Elkhart, all of Ind., assignors to Chore-Time Equipment, Inc., Milford, Ind.

Continuation of Ser. No. 63,425, Aug. 3, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 236,831

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51 R **16 Claims**



9. A method of feeding hogs, comprising the steps of providing the hogs with all the feed they care to consume for not more than three separate limited feeding periods of time per day, and denying all feed to the hogs for not more than three separate limited feeding periods of time per day, at least one feeding period extending for approximately two hours and at least one feedless period extending for approximately six hours, whereby to maximize hog weight gain and minimize the amount of feed consumed by each hog per pound of weight gained by that hog.

4,337,729

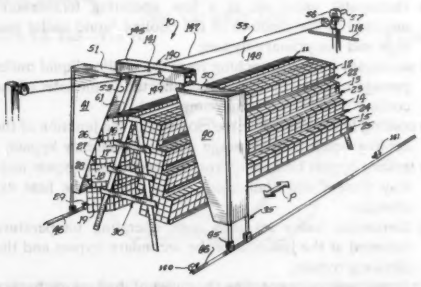
TRAVELING HOPPER FEED DELIVERY SYSTEM

William Peppler, and Mark Skinner, both of Decatur, Ala., assignors to Chore-Time Equipment, Inc., Milford, Ind.

Filed May 13, 1980, Ser. No. 149,337

Int. Cl.³ A01K *39/012*

U.S. Cl. 119—52 B **43 Claims**



1. A feeding system for delivering feed to feed receptacles associated with rows of animal confinement cages, the system comprising, in combination, a mobile frame, hopper means mounted on the frame for carrying a load of feed past the feed receptacles, distributor conveyor means defined by a conveyor wall and carried by the hopper means for drawing feed from the hopper and for urging it toward each feed receptacle, the conveyor wall defining a feed drop-out aperture, drive means carried by the mobile frame for operating the distributor conveyor means, the drive means including cable means having one cable run drivingly connected to the mobile frame for pulling the frame and hopper means along the feed receptacles and an opposite cable run, the drive means further including a drive sheave drivingly connected to the distributor conveyor means and having the second cable run trained about the drive sheave so as to operate the distributor conveyor means whenever the feed hopper is moved, the system further including delivery means for delivering limited amounts of feed from the distributor conveyor means wall aperture to each feed receptacle, sensor-operated valve adjustment means located at the conveyor wall aperture for adjusting the flow of feed from the distributor conveyor means to the feed receptacles, and return means for returning undelivered feed from the distributor conveyor means back to the hopper means.

4,337,730

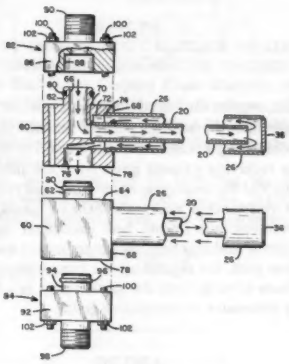
HOT WATER PROBE

Lynn R. Skow, North Branch, Minn., assignor to Gemini Systems, Inc., Rush City, Minn.

Filed Oct. 16, 1980, Ser. No. 197,548

Int. Cl.³ F22B *33/00*

U.S. Cl. 122—20 A **4 Claims**



1. Water heating apparatus for use in heat transfer relation with the combustion chamber of a fuel burning appliance comprising, in combination:

a plurality of header members each including a block of material having a first tubular connector extending outwardly from one surface thereof, a second tubular connector extending inwardly into an opposite surface thereof, said connectors being adapted for mutual interfitting, and a heat exchanger extending from another surface thereof to project into a combustion chamber, and providing a continuous path for fluid flow from an inlet connected to one of said connectors to an outlet connected to the other of said connectors, said header members being arranged in a succession with the first connector of each subsequent member interfitted in the second connector of a previous member;

first adaptor means including a first further block of material having a first further connector extending thereinto and adapted to interfit with the first connector of the initial member of said succession;

second adaptor means including a second further block of material having a second further connector extending therefrom and adapted to interfit in the second connector of the first member of said succession;

fastener means traversing said blocks for maintaining said connectors in interfitted relation to enable flow of liquid through said heat exchangers in succession;

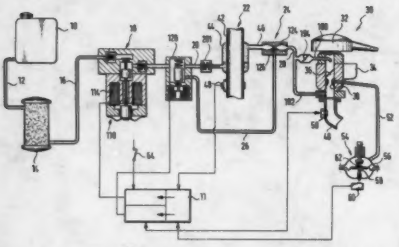
and means for supplying water to one of said further connections and receiving water from the other of said further connectors after flow thereof through said heat exchangers.

4,337,731

FEED SYSTEM FOR INTRODUCING WATER VAPOR INTO THE SUCTION PATH OF AN INTERNAL COMBUSTION ENGINE

Werner Lohberg, Paderborn, Fed. Rep. of Germany, assignor to Reuter Technologie GmbH, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,796
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843355
Int. Cl.³ F02D *19/00*; F02M *25/02*
U.S. Cl. 123—25 B 11 Claims



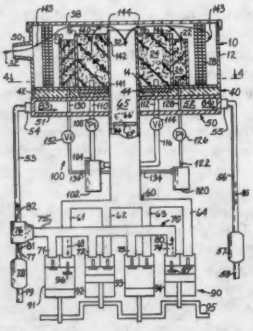
1. A feed system for introducing water in the liquid and/or vapor state into the suction path of an internal combustion engine, comprising a water reservoir and a first heat exchanger means for receiving exhaust gases from the internal combustion engine and for receiving water from said reservoir in heat exchange relationship with said exhaust gases, said system further comprising a second heat exchanger means, located downstream of said first heat exchanger means and upstream of said suction path, for regulating the temperature of the water and/or steam to be fed into the suction path as a function of an operating parameter of the suction path.

4,337,732

FUEL AND WATER CONDITIONER AND METHOD THEREFOR

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed May 27, 1980, Ser. No. 153,699
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—25 B 15 Claims



1. A method for conditioning energy-producing components fed to an engine which develops motive power, comprising in combination the steps of:

(a) diffusing and vaporizing fuel from its liquid to its gaseous state within an air cleaner assembly;

(b) diffusing and vaporizing water from its liquid to its gaseous state within said assembly, concurrently with step (a);

(c) mixing the fuel and water in their gaseous states with air within said assembly; and

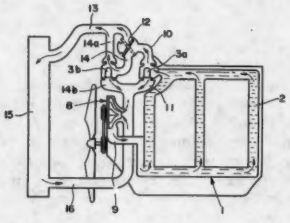
(d) passing the gaseous mixture of fuel, water and air into said engine.

4,337,733

COOLING LIQUID TEMPERATURE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Makizo Hirata, Kakogawa, and Shinji Abe, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Apr. 23, 1981, Ser. No. 256,746
Claims priority, application Japan, Apr. 28, 1980, 55-56946
Int. Cl.³ F01D *7/16*
U.S. Cl. 123—41.1 5 Claims



1. A cooling liquid temperature control system for an internal combustion engine comprising:

a cooling liquid outlet passage connected at one end thereof to an outlet of a jacket containing a cooling liquid for the engine and at the other end thereof to an inlet of a heat exchanger;

a primary bypass branching from said cooling liquid outlet passage at the outlet of the jacket and connected to an inlet of a cooling liquid circulating pump;

a thermostat valve set at a low operating temperature mounted at the junction of the cooling liquid outlet passage and the primary bypass;

a secondary bypass branching from the cooling liquid outlet passage midway thereof and connected to the inlet of the cooling liquid circulating pump;

a cooling liquid control valve mounted in the junction of the cooling liquid outlet passage and the secondary bypass;

a tertiary bypass branching from the secondary bypass midway thereof and connected to the inlet of the heat exchanger;

a thermostat valve set at a high operating temperature mounted at the junction of the secondary bypass and the thertiary bypass;

an outlet passage connecting the outlet of the heat exchanger the inlet of the cooling liquid circulating pump; and

a return passage connecting an outlet of the cooling liquid circulating pump and an inlet of the jacket;

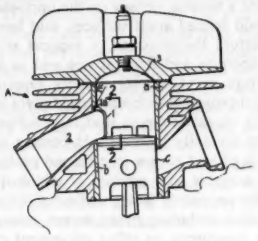
wherein the cooling liquid control valve is coupled to a throttle valve for controlling the power of the engine and operative to open the cooling liquid outlet passage and closes the secondary bypass when the throttle valve has a opening in a predetermined range and to open the secondary bypass and close the cooling liquid outlet passage when the throttle valve has an opening not in the predetermined range.

4,337,734

TWO-CYCLE ENGINE

Toshimitsu Iio, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 29, 1980, Ser. No. 192,336
Claims priority, application Japan, Sep. 27, 1979, 54-124557
Int. Cl.³ F02B *25/14*
U.S. Cl. 123—65 PE 6 Claims



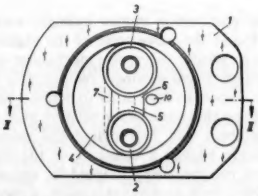
1. In a two cycle engine of the type having a cylinder with an axis, a piston slidably disposed in said cylinder, and an exhaust port through the wall of said cylinder, the closed and opened condition of said exhaust port being a function of the axial position of said piston in said cylinder, said exhaust ports having generally axial side walls and an upper edge extending into the cylinder and away from the piston when said piston is in a lower position, said upper edge at its intersection with the inside cylinder wall, viewed toward said exhaust port, forming the upper portion of an isosceles triangle.

4,337,735

LIGHT METAL CYLINDER HEAD FOR A VALVE-CONTROLLED INTERNAL COMBUSTION ENGINE

Emil Lichtner, Odenthal-Voiswinkel; Gerd Ungeringer, Bergisch Gladbach, and Gerhard Giebel, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 6, 1980, Ser. No. 119,108
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904940
Int. Cl.³ F02F *1/26*
U.S. Cl. 123—193 H 3 Claims



1. A light metal cylinder head for an internal combustion engine controlled by valves, said cylinder head having a bottom which is adapted to be directed toward a combustion chamber belonging therewith, said bottom being provided with valve openings to allow communication with valves belonging therewith, and said cylinder head also having a bore communicating with said bottom substantially between said valve openings for receiving at least one of an injection nozzle and ignition aid, said cylinder head further having improvement in combination therewith comprising:

at least two spaced apart titanium metal inserts in that portion of said bottom extending specifically between said valve openings and to a limited extent capable of taking up changing stresses in said cylinder head; and

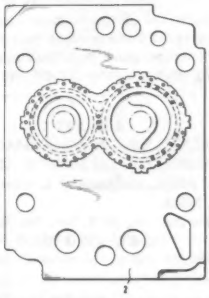
an oxide layer coating additionally provided on only that portion of said bottom bonded by said metal inserts between said valve openings, adjacent the region of said bore, said oxide layer coating having complementary dual effect thereof both for preventing cracks as well as fissure tendency due to thermal stresses and simultaneously for equalizing localized temperature differences in the cylinder head entirely to protect against formation of cracks since further increase of the combustion chamber temperature is substantially reduced and taking-up of material stresses is made possible through more nominal heat expansion of said oxide layer coating compared with that of the light metal cylinder head itself, said metal inserts comprising a material which is also resistant with respect to how said oxide layer coating is produced, said oxide layer coating providing insulation exclusively for a hot location on said bottom to decrease peak temperatures at said location on the one hand and on the other hand permitting only minimal increase of temperature thereof.

4,337,736

METHOD OF PRODUCING CYLINDER HEADS, AND CYLINDER HEADS PRODUCED THEREBY

Walter Rasch; Karl-Heinz Caspers; Klaus Wiebicke, all of Nuremberg, and Max Albert, Nürnberg-Kornburg, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Division of Ser. No. 30,898, Apr. 17, 1979, Pat. No. 4,284,041. This application May 15, 1981, Ser. No. 264,024
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2816989
Int. Cl.³ F02F *1/24*
U.S. Cl. 123—193 H 5 Claims



1. A cylinder head produced having partially reinforced cylinder heads, particularly of internal combustion engines, providing a preformed workpiece of a predetermined material composition; and

casting on said workpiece a material capable of producing a bond with said predetermined material composition for forming a positive connection between said workpiece and said casting material, comprising:

a cast portion; and

a preformed workpiece positively connected to said cast portion for reinforcing those parts of said cast portion which are highly stressed during use;

wherein said predetermined material composition of said preformed workpiece is comprised of a composition including, by weight percent:

C	3.0	maximum

-continued

Si	1.7–2.2
Mn	1.0–1.5
Ni	18–22
Cr	1.8–2.4
Nb	0.1
Mg	0.05
Fe	Balance

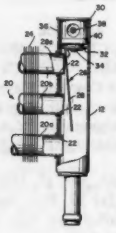
and wherein said casting material includes a cast iron composition same as that of cylinder heads of internal combustion engines.

4,337,737

TEMPERATURE REGULATOR FOR OIL COOLING SYSTEM

Murray Pechner, 2309 W. 144th St., Gardena, Calif. 90249

Filed May 9, 1980, Ser. No. 148,566
Int. Cl.³ F01M 1/00
U.S. Cl. 123—196 AB 5 Claims



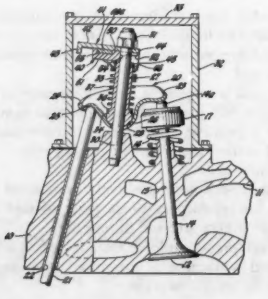
1. In an oil cooler for an internal combustion engine having means defining at least one cooling path for flow of oil extending between oil inlet and outlet plenums, the improvement in regulating the temperature and viscosity of the oil comprising means responsive to the oil temperature and thereby operative to progressively restrict the cooling path means at least partially as the oil temperature decreases and to progressively open the cooling path means as the oil temperature increases.

4,337,738

VALVE CONTROL MECHANISM

William C. Bubniak, Troy, and Harry R. Mitchell, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1975, Ser. No. 588,333
Int. Cl.³ F02D 13/06
U.S. Cl. 123—198 F 16 Claims



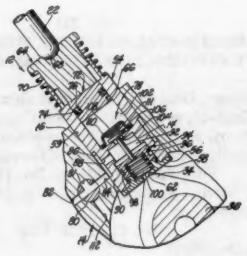
1. In an internal combustion engine having a cylinder head and reciprocally journaled therein a poppet valve with a return spring connected thereto and a reciprocally driven member for operating the poppet valve in a direction opposed by its spring with each stroke of the member in a direction substantially opposite that of the poppet valve, a rocker for normally transmitting valve operating movement from the member to the poppet valve, said rocker having spaced apart surfaces on one side thereof engageable with oppositely facing surfaces of the member and the poppet valve and a bearing portion intermediate its ends with a bearing surface on the opposite side of said rocker from said spaced apart surfaces, said bearing portion having an aperture therethrough, a support stud extending through said aperture and fixed at one end to said cylinder head, an aperture pivot bearing slidably supported on said support stud and provided with a seat, said pivot bearing being movable axially on said support stud from a first position at which said seat pivotally journals said bearing surface about the rocking axis of said rocker to a second position at which said rocker is movable to a position at which it is pivotally supported by the oppositely facing surface of the poppet valve and, power means, including spring means, responsive to engine operating conditions, to effect movement of said pivot bearing to selectively position said seat at said first position and at said second position.

4,337,739

VALVE CONTROL MECHANISM FOR INTERNAL COMBUSTION ENGINES

Edgar R. Jordan, 32260 W. Twelve Mile Rd., Farmington, Mich. 48018

Filed Mar. 24, 1980, Ser. No. 132,949
Int. Cl.³ F02D 13/06
U.S. Cl. 123—198 F 1 Claim



1. An internal combustion engine cylinder valve control mechanism for use in the valve train of the engine to selectively deactivate a cylinder valve, said mechanism comprising: first and second cylindrical members reciprocable in an axial relationship with respect to each other to define a cavity therebetween of a volume that varies upon relative axial movement between the members said first cylindrical member being adapted to slidingly engage a camshaft of the engine, said second cylindrical member being adapted for connection to a pushrod of the valve train to move therewith; a piston located within said cavity and sealingly slidable in axial relationship with the first cylindrical member to define a chamber therebetween that varies upon relative axial sliding between the first cylindrical member and the piston; an inlet passage for feeding pressurized fluid to the chamber to move the piston away from the first cylindrical member to prevent the second cylindrical member from reciprocating with respect to the first cylindrical member; an exhaust passage exhausting the pressurized fluid from the chamber so that the piston is movable towards the first cylindrical member to allow the second cylindrical member to reciprocate with respect to the first cylindrical member to deactivate the valve operation; biasing means operatively associated with the first and second cylindrical members for

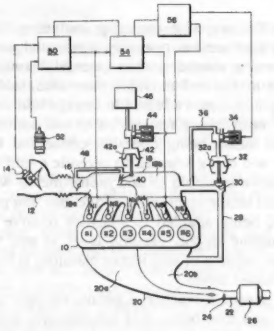
biasing the first and second cylindrical members apart wherein said first cylindrical member maintains sliding engagement with the camshaft so that said mechanism slides on the camshaft during the reciprocation due to the biasing action of the biasing means; a support having an aperture extending completely therethrough for slidably supporting said first cylindrical member for axial reciprocation therein; a valve operatively disposed in said support for alternately opening and closing said inlet and outlet passages, for selectively placing said inlet and outlet passages in fluid communication with said chamber; wherein the first cylindrical member has a control port for feeding pressurized fluid to the chamber from the inlet passage; a check valve that prevents the pressurized fluid from flowing from the chamber back through the control port and through the inlet passage; a third cylindrical member sealingly slidable in axial relationship with the first cylindrical member within the cavity and having a projecting member extending in an axial direction towards said check valve to open the check valve to allow the pressurized fluid to be exhausted from the chamber; and resilient means for biasing said third cylindrical member toward said check valve, to thereby open said check valve in the absence of pressurized fluid from the inlet passage.

4,337,740

INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama; Haruhiko Iizuka, Yokosuka; Yukihiro Etoh, Kandaiji, and Toshiaki Tanaka, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 18, 1980, Ser. No. 160,564
Claims priority, application Japan, Jun. 22, 1979, 54-78701
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—198 F **3 Claims**



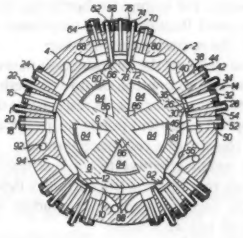
1. An internal combustion engine comprising:
(a) first and second cylinder units, each said units including at least one cylinder;
(b) an intake passage having disposed therein a throttle valve and being divided downstream of said throttle valve into first and second branches communicating with said first and second cylinder units, respectively, said second branch having an intake entrance;
(c) a stop valve positioned generally in the vicinity of said intake entrance of said second branch;
(d) an exhaust gas sensor for providing a signal indicative of the air/fuel ratio at which said engine is operating;
(e) fuel supply means for supplying fuel to said first and second cylinder units, said fuel supply means including means responsive to engine loads for determining a basic value of fuel supply amount and means responsive to the air/fuel ratio indication signal from said exhaust gas sensor for correcting said basic value to maintain a desired air/fuel ratio;
(f) control means for cutting off the supply of fuel to said second cylinder unit to shift engine operation from a full engine mode into a split engine mode, and for closing said stop valve to shut off the flow of fresh air to said second cylinder unit, and for providing a low load indication signal when the engine load is below a predetermined value; and
(g) wherein said fuel supply means is responsive to the low load indication signal from said control unit for determining said basic value of fuel supply amount to create a mixture having an air/fuel ratio richer than said desired air/fuel ratio, whereby an air/fuel mixture leaner than said desired air/fuel mixture is obtained temporarily when the engine operation is shifted from a split engine mode into a full engine mode and an air/fuel mixture richer than said desired air/fuel mixture is obtained temporarily when the engine operation is shifted from the full engine mode into a split engine mode.

4,337,741

ROTARY INTERNAL COMBUSTION ENGINE

Nicholas M. Q. McKenna, and Peter J. Raven, both of 48 Pembroke Rd., Seven Kings, Ilford, Essex, England

Filed Feb. 19, 1980, Ser. No. 122,480
Claims priority, application United Kingdom, Feb. 23, 1979, 7906582
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—228 **9 Claims**



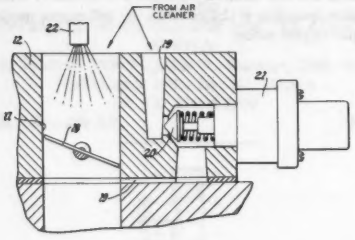
1. A rotary internal combustion engine comprising a housing, a rotor-receiving chamber in the housing, a rotor which is mounted for rotation in the rotor-receiving chamber, at least five discrete combustion chambers which are separated by lobe portions of the rotor, and a valving arrangement for each lobe portion of the rotor, each valving arrangement being mounted in the housing and including an exhaust valve, a power/exhaust slide, a by-pass valve, an induction/compression slide and an inlet valve, the power/exhaust slide being positioned between the exhaust valve and the by-pass valve, the by-pass valve being positioned between the power/exhaust slide and the induction/compression slide, and the induction/compression slide being positioned between the by-pass valve and the inlet valve, the by-pass valve allowing compressed gas to pass from the combustion chamber adjacent one side of a lobe portion to the combustion chamber adjacent the other side of the lobe portion whereby in use of the engine the compressed gas can be ignited when it has been by-passed to the combustion chamber on the said other side of the lobe portion to impart power to the periphery of the rotor substantially solely in the direction of rotation of the rotor.

4,337,742

IDLE AIR CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Clifford R. Carlson, Fenton; Joseph M. Kotzan, Pontiac, and Leo H. Voelkle, Keego Harbor, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 2, 1981, Ser. No. 250,317
Int. Cl.³ F02M 3/00, 23/04
U.S. Cl. 123—339 2 Claims



1. Idle air control apparatus for a vehicle driving internal combustion engine having at least one air induction passage, the engine being subject to stall during engine idle due to large amplitude changes in idle speed caused by predetermined engine loading events and changes in engine and environmental parameters, the engine further being characterized by random idle speed fluctuations of amplitude insufficient to produce stall, the apparatus comprising:

a control valve in the air induction passage effective during engine idle to control air flow therethrough;

a stepper motor effective, in response to the arithmetic count of applied electrical pulses, to position the control valve with respect to a reference position;

register means effective to store at least one valve control number representing the currently desired position of the control valve, said register including memory means that survives engine shutoff;

means effective to sense the predetermined engine loading events and arithmetically change the valve control number in the register means by a predetermined amount assigned to each such event;

up-down counter means effective to arithmetically count the pulses applied to the stepper motor and thus indicate actual control valve position;

means effective to recurrently compare the contents of the up-down counter means and register means and apply pulses as required to the stepper motor at a first predetermined rate to reduce any difference therebetween;

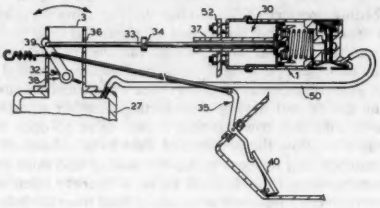
means responsive to actual engine speed only during occurrence of a predetermined steady state idle condition to compare actual engine speed with a desired engine idle speed and arithmetically change the valve control number in the register at a second predetermined rate substantially slower than the first predetermined rate to reduce any difference between said speeds, whereby the apparatus acts to control engine idle air flow to prevent stall due to the predetermined engine loading events and parameter changes but ignores the small random idle speed fluctuations for stability.

4,337,743

THROTTLE PEDAL FEEDBACK APPARATUS FOR ECONOMICAL ENGINE OPERATION

Richard W. Mattson, Rossford, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Continuation of Ser. No. 824,755, Aug. 15, 1977, abandoned.
This application Aug. 20, 1979, Ser. No. 67,970
Int. Cl.³ F02D 11/08
U.S. Cl. 123—396 2 Claims



1. An apparatus adapted to provide a stepwise throttle control feedback to indicate operation of an internal combustion having an intake manifold at a vacuum level less than a first predetermined vacuum level in said intake manifold, comprising:

resistance means;

means for stepwise engaging said resistance means and said throttle control at a preselected relative position therebetween;

motor means for moving said resistance means;

control means responsive to said vacuum for controlling said motor to stepwise adjust the position of said resistance means;

said means for stepwise engaging including linkage means having a first section operably connected to said throttle control and a second section operably connected to said resistance means and movable therewith, said first section including stop means adapted to engage said second section;

said motor means being responsive to said control means;

said control means being operably connected to said intake manifold and being adapted to provide a said vacuum level of said intake manifold to said motor means when said vacuum of said intake manifold is above said first predetermined level, and being adapted to stepwise remove said substantially constant second vacuum level to said motor means when said vacuum of said intake manifold is below said first predetermined level;

said motor means including a piston slidably mounted in a chamber in a first body, said substantially constant second vacuum level being provided to a portion of said chamber between a first end thereof and said piston;

said resistance means including a spring disposed in said portion of said chamber between said first end and said piston;

said second section of said linkage means being connected to said piston;

said control means including a valve means disposed within said first body and having a first port connected to said intake manifold, a second port connected to an ambient atmospheric pressure and an output port connected to said portion of said chamber between said first end and said piston;

said valve means including a valve member adapted to operably connect said intake manifold to said portion of said chamber when said vacuum level is above said first predetermined vacuum level and to stepwise connect said ambient atmospheric pressure to said portion of said chamber when said vacuum level is below said first predetermined vacuum level;

said valve member being adapted to simultaneously close said first port and open said second port.

4,337,744

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

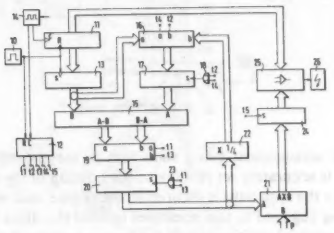
Karl Seeger, Markgröningen; Werner Jundt, Ludwigsburg; Manfred Mezger, Markgröningen; Uwe Kiencke, Ludwigsburg; Jurgen Wësemeyer, Nuremberg; Georg Haubner, Berg, and Werner Meier, Rednitzhembach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 31, 1980, Ser. No. 221,788

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000562

Int. Cl.³ F02P 5/04

U.S. Cl. 123—416 **18 Claims**



1. An ignition timing system for an internal combustion engine having an ignition coil of which the primary circuit contains an electrically controllable interrupter switch for energizing the primary circuit during the dwell time of the switch and setting off a spark in the secondary circuit of the coil when the switch opens at the end of the dwell time, said timing system comprising:

means (14) for producing pulses at a constant frequency;

first counting means (11) connected for counting pulses of said constant frequency pulse producing means and having count starting means (10) connected in circuit therewith and count result storage means (13) connected for provision in said count result storage means by said first counting means of a count value (Z_n) representative of engine speed;

means for producing a parameter-dependent count value (P) representative of the substantially current condition of at least one engine operation parameter;

first multiplier means (21) for multiplying said parameter-dependent count value by a speed-dependent count value obtained from said engine speed count value and thereby producing a product count value, and

comparator means (25) responsive to a count output of said first counting means (11) and to the count value produced by said multiplier means (21) for providing an ignition timing signal to said interrupter switch when the count output of said first counting means (11) reaches or exceeds said count value produced by said first multiplier means (21).

4,337,745

CLOSED LOOP AIR/FUEL RATIO CONTROL SYSTEM WITH OXYGEN SENSOR SIGNAL COMPENSATION

Allen J. Pomerantz, Bancroft, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1980, Ser. No. 191,070

Int. Cl.³ F02M 7/00

U.S. Cl. 123—440 **2 Claims**

1. A fuel control system for an internal combustion engine having means defining an exhaust passage into which spent combustion gases are discharged, comprising, in combination:

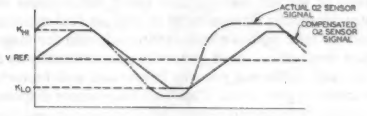
a sensor responsive to the oxidizing/reducing conditions in the exhaust passage effective to generate a sensor signal varying between high and low values when the oxidizing/reducing condition of the exhaust gases varies through a stoichiometric condition, the time response of the sensor signal to changing oxidizing/reducing conditions in one direction through the stoichiometric condition varying from its time response to changing oxidizing/reducing conditions in the opposite direction through the stoichiometric condition and varying with sensor aging and operating temperature;

means responsive to the sensor signal effective to generate a compensated sensor signal (A) increasing at a constant rate less than the smallest rate of change of the sensor signal over the sensor life and operating temperature range in response to a change in the oxidizing/reducing condition through the stoichiometric condition when the sensor signal is greater than the compensated sensor signal and (B) decreasing at the constant rate when the sensor signal is less than the compensated sensor signal;

means effective to limit the maximum value of the compensated sensor signal to a value less than the sensor signal high value and limiting the minimum value of the compensated sensor signal to a value greater than the sensor signal low value;

means effective to compare the compensated sensor signal to a reference value intermediate the limited values of the compensated sensor signal and which represents a desired oxidizing/reducing condition of the exhaust gases and providing an error signal; and

means responsive to the error signal effective to adjust the



ratio of the air-fuel mixture supplied to the engine in a sense tending to restore the desired oxidizing/reducing condition, the adjustment of the air-fuel ratio being independent of variations of the time response of the sensor signal.

2. The method of generating a compensated sensor signal from the sensor signal provided by a sensor monitoring the oxidizing/reducing condition in the exhaust gases discharged from an internal combustion engine for use in a closed loop air/fuel ratio controller, comprising the steps of:

comparing the value of the sensor signal with the value of the compensated sensor signal;

increasing the value of the compensated sensor signal at a constant rate less than the smallest rate of change of the sensor signal in response to a change in the oxidizing/reducing condition through the stoichiometric condition when the value of the sensor signal is greater than the value of the compensated sensor signal;

decreasing the value of the compensated sensor signal at the constant rate when the value of the sensor signal is less than the value of the compensated sensor signal; and

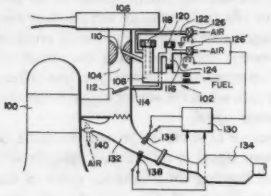
limiting the compensated sensor signal to values between a maximum value less than the maximum sensor signal value and a minimum value greater than the minimum sensor signal value, the compensated sensor signal being independent of differences in the time response of the sensor signal in response to changes in the oxidizing/reducing conditions through the stoichiometric condition.

4,337,746

SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN INTERNAL COMBUSTION ENGINE

Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 20, 1980, Ser. No. 161,406
Claims priority, application Japan, Jun. 22, 1979, 54-78697
Int. Cl.[3] G01N *27/58;* F02D *33/00;* G01N *27/46;* F02D *3/04*
U.S. Cl. 123—489 11 Claims



1. A control system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine, the system comprising:

an electrically controllable fuel supply means for supplying fuel to the engine;

a first oxygen-sensitive air/fuel ratio sensor having an oxygen ion conductive solid electrolyte layer and two electrode layers formed on the solid electrolyte layer and disposed in an exhaust passage of the engine;

a power supply means for supplying a DC current to said solid electrolyte layer of said first sensor whereby said first sensor produces an output having one of (a) first type slope output characteristic wherein the magnitude of the output of said first sensor varies generally proportionally as the air-fuel ratio of said air-fuel mixture varies but remains above the stoichiometric air/fuel ratio of said air-fuel mixture and (b) second type output characteristic wherein the magnitude of said first sensor varies generally proportionally as the air/fuel ratio varies but remains below said stoichiometric ratio;

a second oxygen-sensitive air/fuel ratio sensor disposed in said exhaust passage and positioned proximate to said first sensor, said second sensor having an off-type output characteristic wherein the output characteristic of said second sensor varies between a generally constant maximally high level and a generally constant maximally low level when the air/fuel ratio of said air-fuel mixture changes across said stoichiometric ratio; and

a control means for providing a control signal to said fuel supply means by utilizing the output of said first sensor as a feedback signal, said control means further including a discriminating means responsive to the output of said second sensor for selectively blocking the output of said first sensor means from said control means according to the output of said second sensor.

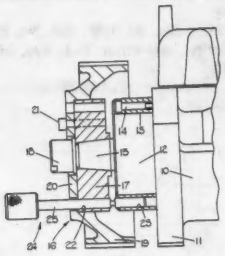
4,337,747

FUEL INJECTION PUMPING APPARATUS

John R. Jefferson, Rainham, and Frank Cunliffe, Doddington, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jan. 13, 1981, Ser. No. 224,695
Claims priority, application United Kingdom, Feb. 8, 1980, 8004234
Int. Cl.[3] F02M *59/20*
U.S. Cl. 123—501 3 Claims

1. A fuel injection pumping apparatus of the kind comprising a housing, a drive shaft extending from the housing, sprocket means mounted on the drive shaft, said sprocket means defining a toothed peripheral surface for engagement in use, with a flexible drive member which is also engaged with a sprocket driven by the associated engine, the apparatus including an injection pump driven by said drive shaft and which delivers fuel at a predetermined time, to an outlet, said sprocket means being formed in two parts, one of which is rigidly secured to the drive shaft and the other of which is adjustably secured to said one part and has a peripheral surface for engagement by the drive member, and the housing of the apparatus mounts an adjustable member, said adjustable member and said one part defining apertures which can be engaged in use, by a retaining



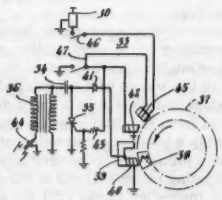
tool, the arrangement being such that in use the adjustable member is accurately set relative to the housing of the apparatus before the apparatus is secured to the engine, said retaining tool being engaged in said apertures to hold the drive shaft at a predetermined position whilst the engine position is adjusted after which the sprocket parts are secured together.

4,337,748

INTERNAL COMBUSTION ENGINE

Thomas O. J. Engman, Mullsjö, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden

Filed Apr. 11, 1980, Ser. No. 139,333
Claims priority, application Sweden, Apr. 11, 1979, 7903213
Int. Cl.[3] F02P *5/02*
U.S. Cl. 123—602 6 Claims



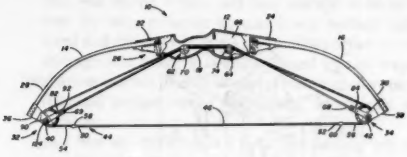
1. In an internal combustion engine having a pressure discharge opening in a cylinder wall, and an electric ignition system having an ignition coil, a current source, and a spark release trigger means arranged to effect ignition in said engine at a time before top dead center during a compression stroke for producing maximum mechanical output from said engine, the improvement wherein said ignition system has an ignition presetting circuit with a second sprak release trigger means positioned to provide a time of ignition earlier in the compression stroke of the engine than the time of ignition determined by said first-mentioned spark release trigger means, said second spark release trigger means being positioned to provide a substantially higher pressure at said discharge opening as compared with the pressure when ignition is determined by said first-mentioned spark release trigger means, and further comprising an operating valve in said discharge opening, and an operating switch connected to selectively energize said ignition presetting circuit.

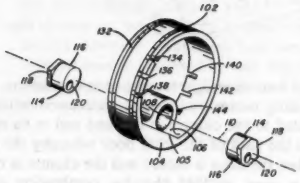
4,337,749

COMPOUND BOW

Alex J. Barna, 1216 Crawford St., Duquesne, Pa. 15110

Division of Ser. No. 927,547, Jul. 24, 1978, Pat. No. 4,261,320.
This application Jun. 26, 1980, Ser. No. 163,152
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **4 Claims**





1. A method for controlling the draw weight of a compound bow comprising,

extending a first cable portion between eccentric wheel means attached to the free end portions of a pair of limbs of the bow,

connecting the first ends of second and third cable portions to the ends of the first cable portion,

connecting the second ends of the second and third cable portions to the free end portions of the pair of limbs respectively,

passing a preselected amount of the intermediate portion of the second and third cable portions around a portion of the peripheral surface of the eccentric wheel means to thereby control the amount of the cable intermediate portion positioned on the peripheral surface to provide a preselected draw weight for the bow,

positioning the cable intermediate portion in a first annular groove on the peripheral surface of the eccentric wheel means.

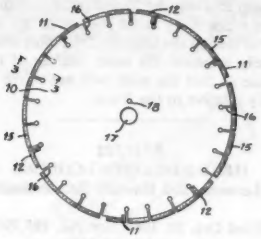
4,337,750

ABRASION RESISTANT DIAMOND BLADE

Richard E. Dutcher, Lilburn, Ga., assignor to Norton Company, Worcester, Mass.

Filed Oct. 8, 1980, Ser. No. 195,580
Int. Cl.³ B24D *5/06*
U.S. Cl. 125—15 **2 Claims**

1. A circular rotary cutting blade having hard abrasive segments, selected from the group consisting of diamond particles, cubic boron nitride particles or diamond and cubic boron nitride particles bonded in a hard metal matrix, bonded to the periphery, and separated by radially extending gullets, wherein at least some of the segments are hook shaped and have a leg extending from one end toward the center of the blade, the



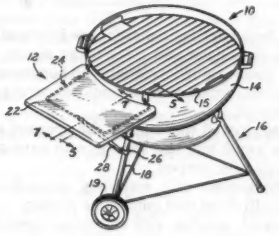
improvement comprising the inclusion of segments having leg lengths differing, one from the other, by at least 10%.

4,337,751

BARBECUE GRILL ACCESSORY

Gerald L. Sampson, 5324 Long Acre Rd., and John E. Rummele, 2219 N. 7th, both of Sheboygan, Wis. 53081

Filed Feb. 1, 1980, Ser. No. 117,669
Int. Cl.³ B28D *1/32*; A47B *5/00*
U.S. Cl. 126—25 R **1 Claim**



1. A barbecue grill accessory for a grill having a fire bowl with a rim and an understructure supporting the fire bowl, said accessory comprising

(a) a generally U-shaped wire frame comprising a horizontal outer portion and side legs bent at an angle to the outer portion, said side legs extending generally horizontally toward the fire bowl and having inner end portions that extend vertically and which are adapted to abut against the exterior surface of said fire bowl below the rim, said side legs not contacting each other or anything else other than said outer portion so that the side legs can thereby be spread apart with respect to each other depending upon the diameter of the fire bowl, said inner end portions being configured to include a stop means portion on the frame which will extend over and partially around an inner edge of a table to prevent accidental upward displacement of the front of the table relative to the U-shaped wire frame,

(b) inverted U-shaped metal clips connected to the vertical inner end portion of each side leg, each said clip being adapted to hook over the rim of the fire bowl and cooperating with said vertical inner portions of said side legs that abut against the exterior of said fire bowl so as to thereby support said wire frame in a cantilevered fashion with respect to the fire bowl so that the U-shaped wire frame extends in a generally horizontal plane at an elevation below said rim;

(c) said U-shaped frame constituting an upwardly facing support surface for loosely supporting said table thereon,

(d) said table seated on said support surface in spaced relation to said rim to enable closing a cover of the grill over

the rim without interference from the table, said table having a width greater than the width of said wire frame,

(e) a brace removably connected to the understructure of the grill, said brace extending upwardly at an angle and having an upper end secured to said outer portion of the frame to further support the outer portion of the frame, and

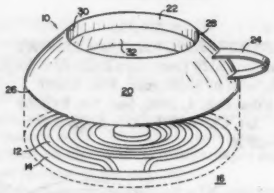
(f) an array of feet on the bottom of the table arranged within and closely adjacent the inner outline of the U-shaped wire frame so that the table will not move laterally and outwardly relative to the frame.

4,337,752

HEAT RE-TAINING COLLAR

Nicholas P. Leounes, 200 Howard Dr., Belleair Beach, Fla. 33535

Filed Oct. 10, 1980, Ser. No. 195,794
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—215 **6 Claims**



1. A heat retaining collar for use in intensifying and capturing the heat generated by a range burner which burner is disposed substantially centrally and horizontally coplanar with an aperture formed on a conventional range top, comprising, in combination,

a spacing wall surrounding the aperture and supported on the range top, said spacing wall having an outer and an inner edge portion,

a first annular wall extending upwardly and radially inwardly from said outer edge portion,

a second annular wall extending upwardly and radially inwardly from said inner edge portion,

said first and second annular walls interconnected remote from said spacing wall by means of an annular flange wall vertically oriented so that said flange wall, spacing wall and first and second annular walls together define a dead air space having an enlarged lower volume portion and a comparatively narrowed upper volume portion,

an item of cookware to be disposed within said collar and supported by the burner so that a lower portion of a wall of the cookware item is surrounded by said collar,

means contacting the cookware wall above the burner so as to define a further air space defined by said contacting means, said second annular wall, and the cookware wall, said further air space having a narrowed upper portion,

said contacting means comprising an annular shelf member extending horizontally inwardly from and supported by said vertical flange,

said contacting means further comprising a first nesting collar supported on said shelf member and extending radially inwardly, said nesting collar having an open inner portion adapted to receive the item of cookware therein.

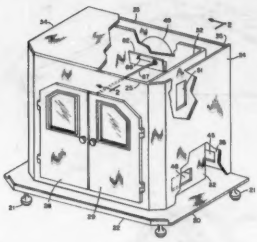
4,337,753

STOVE HAVING NONESCAPING SMOKE

Terrance E. McGinn, Sellersville, Pa., assignor to Penn-Field Stove, Inc., Sellersville, Pa.

Filed Aug. 27, 1980, Ser. No. 181,781
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—287 **1 Claim**

1. A stove comprising a cabinet having spaced inner and outer walls providing a heating chamber between them and the inner wall providing therein an internal fire box, the outer wall having a front door opening and a rear flue outlet opening, a movable door for closing the front door opening, the inner wall having a main side opening remote from the flue opening so that combustion gases from the fire box must pass through the chamber to exit out of the flue opening, the inner wall also having a rear auxiliary opening directly opposite the flue opening so that combustion gases from the fire box can pass directly to the flue opening, a movable closure for the auxiliary opening



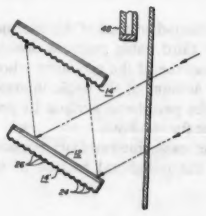
which is biased by its own weight toward an open position, and operative connecting means including a pusher rod which is pivotally connected to the closure at one end and at its other end projects into the path of the front door whereby the closure is closed when the door is closed and the closure is open when the door is open, so that, thereby, combustion gases escape directly from the fire box through said auxiliary opening and directly to the flue and bypass said chamber.

4,337,754

SOLAR REFLECTOR AND HEAT STORAGE DEVICE

Steven J. Conger, P.O. Box 286, Snowmass, Colo. 81654

Filed Apr. 14, 1980, Ser. No. 140,503
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **11 Claims**



1. A solar energy collection and emission tray comprising:

a reflective upper surface for reflecting impinging sunlight;

an absorptive lower surface;

a heat storage material disposed between said upper and lower surfaces; and

said lower surface including first and second sets of alternating, divergently directed faces, said first set being a high absorptivity, low emissivity surface and said second set being highly emissive so that the thermal energy absorbed by said first set and stored by said heat storage material is emitted by said second set.

3. A passive solar system for use within a structure adjacent a window, comprising:

a plurality of trays having a reflective upper surface for reflecting impinging sunlight passing into the structure through the window, and having an absorptive lower surface disposed opposite said upper surface;

a heat storage material disposed between said upper and lower surfaces; and

means for supporting said trays adjacent said window in a

predetermined spaced relationship so that relatively high angled sunlight is reflected from the upper surface of a first tray back through said window thereby keeping said structure cool and relatively low angled sunlight is reflected onto the lower surface of a second tray situated above said first tray so that said reflected low angled sunlight is absorbed by the lower surface of said second tray and stored within said heat storage material of said tray for later emission by said lower surface, said trays sized and disposed so that a substantial portion of the view through said window is unobstructed by said trays;

said lower surface of each of said plurality of trays including:

first and second sets of alternating, divergently directed faces;

said first set disposed in a first direction so that sunlight reflected from said upper surface of said first tray onto said lower surface of said second tray impinges upon said first set of faces, said first set being a high absorptivity, low emissivity surface; and

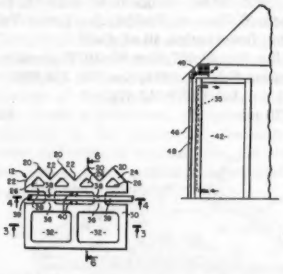
said second set being highly emissive and disposed in a second direction away from said window so that the thermal energy absorbed by said first set and stored by said heat storage material is emitted by said second set into said structure.

4,337,755

SOLAR COLLECTOR BLOCK

Jay R. Pitha, R.D. #3, Box 211, Washington, N.J. 07882

Filed Apr. 23, 1980, Ser. No. 143,010
Int. Cl.³ F24J 3/02
U.S. Cl. 126—431 **29 Claims**



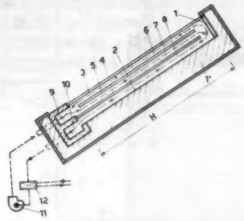
1. Apparatus for collecting solar heat comprising a building block including a front outside surface for facing in a generally southern direction, the outside face having surfaces that meet with one another along lines from which the said surfaces slope away from the south so that the sun strikes intervening areas of said sloping faces when the sun shines on said sloping surfaces in the morning and afternoon respectively, first passage-defining chambers in the block extending generally parallel to said lines from which the surfaces slope away from a north-south meridian, walls closing the rearward parts of the chambers, the block having a rearward portion that is secured to the walls closing the rearward parts of the chambers for stiffening the block, a chamber in the rearward portion of the block, and heat insulating material in the chamber for impeding the flow of heat from the rearward portion of the block toward the front face of the block when there is no sunlight shining on the front face, the walls of the block and all of the chambers being part of a continuous casing, and said first chambers being adapted for vertically continuous circulating-fluid passage alignment when plural such blocks are arrayed in successive layers to define a wall.

4,337,756

PANEL FOR COLLECTING SOLAR ENERGY WITH REDUCED LOSSES

Sergio Serapioni, Via S. Romedio, 1, Brentonico, Italy

Filed Dec. 4, 1979, Ser. No. 100,113
Claims priority, application Italy, Dec. 5, 1978, 30537 A/78
Int. Cl.³ F24J 3/02
U.S. Cl. 126—432 **7 Claims**



1. A panel for collecting solar energy, comprising on a common support: a base absorbing surface, a flat transparent cover plate parallel thereto, and first and second intermediate glass plates between and parallel to said absorbing surface and said cover plate, said first glass plate being closer to said cover plate than said second glass plate, an air inlet and an air outlet, said air inlet positioned adjacent said first plate and means for flowing an air stream from said air inlet so as to flow along both sides of said first glass plate and to join again downstream of said first glass plate and then flow between said second glass plate and said absorbing surface and flow to said air outlet downstream of said absorbing surface, the distance between said base absorbing surface and said second glass plate being less than the distance between said intermediate glass plates or between the cover plate and said first intermediate glass plate.

7. A panel for collecting solar energy, comprising on a common support: a base absorbing surface, a flat transparent cover plate parallel thereto, and first and second intermediate glass plates between and parallel to said absorbing surface and said cover plate, said first glass plate being closer to said cover plate than said second glass plate, and means for causing an air stream to flow within the panel from an air inlet and to divide in front of said first glass plate so as to flow along both sides of said first glass plate and to join again downstream of said first glass plate and flow to an air outlet downstream of said absorbing surface, the distance between said base absorbing surface and said second glass plate being less than the distance between said intermediate glass plates or between the cover plate and said first intermediate glass plate, the distances between the intermediate glass plates and between said glass plates and respectively said cover plate and said absorbing surface being in the range from 1 to 12 mm, and the distance between said absorbing surface and said second glass plate being in the range of from 1 to 5 mm.

4,337,757

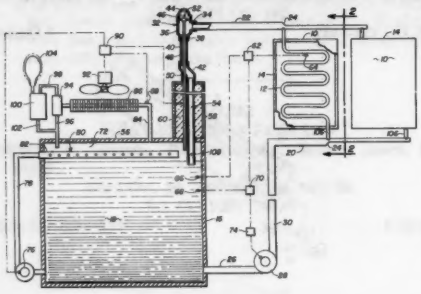
SOLAR HEAT COLLECTION AND STORAGE SYSTEM

Alwin B. Newton, 136 Shelbourne Dr., York, Pa. 17403

Filed Jan. 7, 1980, Ser. No. 109,799
Int. Cl.³ F24J 3/02
U.S. Cl. 126—437 **11 Claims**

1. A closed solar energy collection and storage system comprising in combination, one or more solar heat collector units extending upward from lower to an upper level, feed and return headers respectively connected to said lower and upper levels of said collector units at the opposite ends thereof for simultaneous circulation therethrough, a liquid storage tank at a level below at least said upper return header, a circulating pump, means connecting said pump to the lower part of said tank, a first conduit between said pump and said lower feed header, a multiple jet spray device in the upper portion of said

tank to condense any steam present therein, a second pump connected to said tank at a level to receive liquid from said tank, and a conduit between said second pump and spray device to operate said spray for condensing any steam or vapor passed to said tank by a return vent, and a second conduit



extending downward from said upper return header into liquid in said tank, and a return vent extending downward from said upper return header coaxially through at least a portion of said second conduit to the top of said storage tank for passage of air and/or gas or steam therebetween.

4,337,758

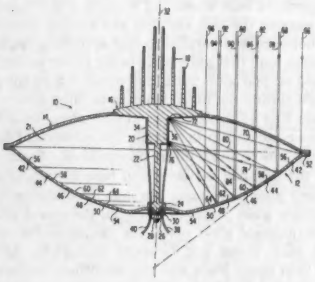
SOLAR ENERGY COLLECTOR AND CONVERTER

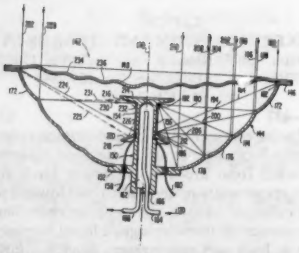
Aden B. Meinel, and Walter B. Meinel, both of 10121 Catalina Hwy., Tucson, Ariz. 85715

Continuation-in-part of Ser. No. 917,735, Jun. 21, 1978, abandoned. This application May 4, 1979, Ser. No. 35,846

Int. Cl.[3] **F24J** *3/02;* **H01L** *31/00;* **F28F** *7/00*

U.S. Cl. 126—438 **28 Claims**





13. Apparatus for collecting and concentrating energy from a remote electromagnetic radiation source, comprising

first reflector means defining a concave reflective surface having a cross-section including a focal axis, the cross-section being substantially symmetrical about the focal axis,

support means associated with the first reflector means, and

receiver means for absorbing energy reflected from the reflective surface of the first reflector means, the receiver means being carried by the support means and including receiver surface means extending in outwardly spaced substantially parallel relation to the focal axis, the receiver surface means having a predetermined finite length along and being substantially symmetrical with respect to the focal axis,

the reflective surface of the first reflector means being contoured and positioned with respect to the receiver surface means so that radiated electromagnetic energy striking the reflective surface is reflected directly onto and distributed substantially uniformly over the full extent of the receiver surface means when the focal axis is oriented toward the remote electromagnetic radiation source,

the apparatus having a shape generated by translating the cross-section and its focal axis along a line perpendicular to the focal axis and to the plane of the cross-section to develop an elongated module in which the first reflector means is a trough-shaped structure having a focal plane defined by the path through which the focal axis is translated and wherein the receiver surface means is disposed in laterally spaced parallel relation to the focal plane on each side thereof.

4,337,759

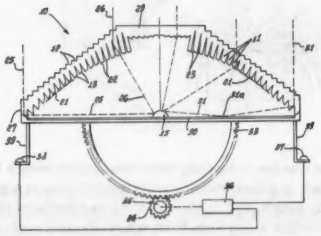
RADIANT ENERGY CONCENTRATION BY OPTICAL TOTAL INTERNAL REFLECTION

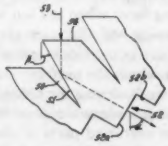
John M. Popovich, 2640 Hermosa Ave. #3, Hermosa Beach, Calif. 90254; William A. Parkyn, Jr., 40210 92d St., Leona Valley, Calif. 93550, and David G. Pelka, 8315 Kenyon Ave., Los Angeles, Calif. 90045, assignors to John M. Popovich, Hermosa Beach; William A. Parkyn, Jr., Leona Valley and David G. Pelka, Los Angeles, all of, Calif.

Continuation of Ser. No. 83,467, Oct. 10, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,859

Int. Cl.[3] **F24J** *3/02*

U.S. Cl. 126—438 **32 Claims**





1. A radiant energy redirecting system comprising

(a) a radiant energy transmitting body means,

(b) said means comprising multiple elements, each of which acts as a radiant energy redirecting module, having on its cross-sectional perimeter an entry face to receive incidence of said energy into the interior of said perimeter, an exit face to pass said energy to the exterior of said perimeter in a direction towards the reverse side of the body

from the side of said incidence, and a Totally Internally Reflecting face angled relative to said entry and exit faces to redirect towards said exit face the radiant energy incident from said entry face,

(c) said body means generally redirecting incident radiant energy for travel towards a predetermined target zone situated apart from and on the reverse side of said body relative to the side of said incidence, said entry faces defining a first set and said exit faces defining a second set, the faces of one of the sets being variably angled relative to one another, and with angularity that progressively increases for successive elements, relative to the target zone,

(d) the elements forming tapered gaps therebetween, said gaps having apices, the body being continuous and uninterrupted everywhere along straightlines joining successive of said apices, in planes normal to said faces.

4,337,760

METHOD FOR THE TREATMENT OF TUMORS WITH β-GLUCURONIDASE ACTIVITY DEPENDENT PHARMACEUTICALS

David Rubin, c/o Israel Medical Research Foundation, P.O. Box 3592, Jerusalem, Israel, assignor to Adolf Schwimmer, Savyon; Irwin Steven Schwartz, Tel-Aviv and David Rubin, Jerusalem, all of, Israel

Continuation-in-part of Ser. No. 951,269, Oct. 13, 1978, Ser. No. 951,270, Oct. 13, 1978, and Ser. No. 11,619, Feb. 12, 1979. This application Oct. 31, 1979, Ser. No. 89,888

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—1 R **10 Claims**

1. In a process of selectively delivering the aglycone of a glucuronide compound to tumor cells having higher β-glucuronidase activity than that of the surrounding tissues by hyperacidifying the tumor cells and then administering to the patient a glucuronide compound, the aglycone of which is to be delivered to the tumor cells, whereby the β-glucuronidase activity of the hyperacidified tumor cells causes deconjugation of the glucuronide compound at the site of the tumor cells and release of the aglycone thereat, the improvement wherein the tumor selectivity of the process is improved and the risk of deconjugation of the glucuronide compound at the site of non-tumor tissues is diminished, comprising:

administering to the patient an alkalinizing agent in an amount sufficient to maintain the pH level of the non-tumor tissues of the patient at approximately 7.4 during the glucuronide treatment.

4,337,761

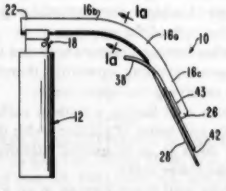
LARYNGOSCOPE

Michael S. Upsher, 2957 Adeline Dr., Burlingame, Calif. 94010

Filed Nov. 28, 1979, Ser. No. 98,271

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—11 **32 Claims**



1. In a laryngoscope of the type having a handle: a generally self-sustaining blade having a first end, a second end, and means at the first end thereof for attaching the same to the handle, the blade being curved at a portion thereof intermediate the ends, the blade adapted to be inserted into the throat of a patient and being tubular along its length to present a guide to permit a flexible, elongated member to be directed along and through the blade and into the throat, said blade having a slot therein at a location permitting a view of the throat through and along a portion of the blade as the blade is initially inserted in the throat, said slot being sufficiently narrow to retain said flexible member within the tubular blade as said member is guided therethrough from said first end to said second end; means coupled to the blade for presenting a light source near the second end thereof; an elongated fiber optic viewing member having a first end face near said second end and extending at least partially along the blade toward said first end thereof, said viewing member having a second end face for viewing light striking said first end face of the member.

4,337,762

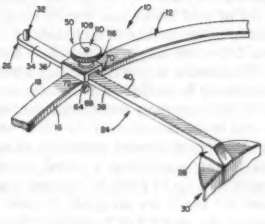
SURGICAL RETRACTOR

William K. Gauthier, 400 Northline, Metairie, La. 70005

Filed Feb. 19, 1980, Ser. No. 122,619

Int. Cl.³ A61B *17/02*

U.S. Cl. 128—20 **5 Claims**



1. A surgical retractor comprising:

an annular support ring;

a unitary one-piece retractor arm having a retractor blade integrally mounted thereon at one end of said arm and a stop on another end of said arm; and

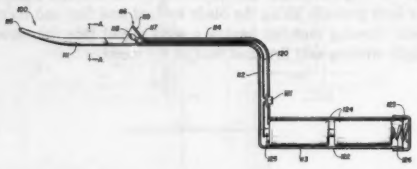
a unitary, integral clamp coupling said retractor arm to said support ring, said clamp including a unitary one-piece C-shaped body having a pair of legs at one end of said C-shaped body, and having ring accommodating openings therethrough and arm accommodating openings therethrough, said ring and arm accommodating openings being oriented at a right angle with respect to each other so that said arm is oriented at a right angle with respect to said support ring when said arm is held on said ring by said clamp, said clamp body including abutment means on said legs abutting the inner periphery of said support ring to prevent said clamp from separating from said support ring, whereby said clamp allows engagement of both the ring and arm members with one locking member; said clamp further including a projection extending upwardly therefrom and having a bore defined therethrough, said clamp further including a rod extending through said bore for contacting at one end thereof said retractor arm and a captive nut on another end of said rod, said captive nut and said projection having first coupling means thereon for attaching said nut to said projection, said captive nut and said rod having further coupling means thereon for forcing said rod one end against said retractor arm, said clamp having support ring capture means for holding said ring in said clamp, said retractor arm being sandwiched between said rod one end and said support ring so that said retractor arm is securely held on said ring by said clamp.

4,337,763

ILLUMINATED SURGICAL INSTRUMENT

Cornel H. Petrassevich, Philadelphia, Miss., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Apr. 21, 1980, Ser. No. 141,764
Int. Cl.[3] A61B *17/24*
U.S. Cl. 128—20 4 Claims



1. A surgical retractor comprising:
(a) a substantially straight, generally horizontally extending blade portion having a distal tip, a proximate end and a concave upper surface;
(b) a shank portion generally downwardly vertically depending from the proximate end of said blade;
(c) a handle portion joined to the lower end of said shank portion and projecting rearwardly therefrom and generally parallel to said blade portion;
(d) illumination means for projecting a circle of light toward the tip of said blade, said means being mounted on the concave upper surface of said blade at a location between ¼ and 2/5 of the length of said blade from the tip thereof, said illumination means comprising a bulb and socket, said socket being formed in said concave surface and projecting slightly upwardly away from said blade at said location and in the direction of the tip of said blade;
(e) said bulb being located externally of said blade;
(f) said socket comprising a flared upper wall extending towards said tip to form an integral shade, whereby said socket and shade are integrally formed in said blade and whereby the user's eye is shielded from the direct light from said bulb, and whereby said shade also directs more of the light towards said tip to better illuminate the area under examination;
(g) battery means contained in a hollow formed in said handle;
(h) electrically conducting means connecting said illuminating means to said battery means; and
(i) switch means for completing or interrupting the electrical circuit between said light fixture and said battery means.

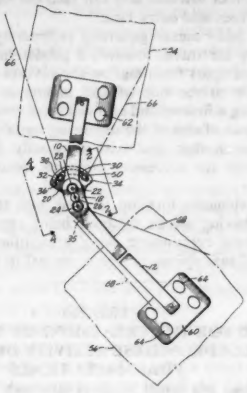
4,337,764

ADJUSTABLE MOTION BRACE

Max Lerman, Beverly Hills, Calif., assignor to United States Manufacturing Company, Pasadena, Calif.

Filed Mar. 2, 1981, Ser. No. 239,404
Int. Cl.[3] A61F *5/00*
U.S. Cl. 128—80 F 2 Claims

1. A brace comprising a first bar; a second bar; pivot means for joining adjacent portions of the first and second bars to allow the first and second bars to pivot relative to each other about an axis; a bracket overlying said adjacent portions of the first and second bars; first means for rigidly securing the bracket to the first bar, the bracket extending away from the first bar toward the second bar; means for rigidly securing the bracket to the second bar; the bracket having left and right protruding portions extending laterally away from respective left and right edges of the second bar; an elongated continuous groove on the left protruding portion and the right protruding portion of the bracket; adjustable left stop means for being releasably secured to a desired location in the portion of the groove on the left protruding portion of the bracket so the second bar can engage the left stop means for limiting its travel in the left direction; and adjustable right stop means for being releasably secured to a desired location in the portion of the groove on the right protruding portion of the bracket so the



second bar can engage the right stop means for limiting its travel in the right direction.

4,337,765

MOUTHGUARD

Edgar S. Zimmerman, 631 Newman Springs Rd., P.O. Box 216, Lincroft, N.J. 07738

Filed Nov. 26, 1980, Ser. No. 210,824
Int. Cl.[3] A63B *23/00*
U.S. Cl. 128—136 11 Claims

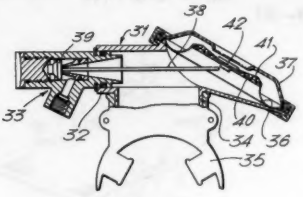
1. A mouthguard comprising:
(a) a member formed of a resilient material and having an approximate U-shape corresponding generally to the shape of the arch of the upper jaw;
(b) said member having a bottom wall and spaced inner and outer flanges extending upwardly therefrom, forming a cavity for receiving the upper teeth;
(c) said bottom wall having a bottom surface substantially flat laterally and being of greater width than the width of the lower teeth so as to extend laterally across the full width of the lower teeth;
(d) said bottom wall being formed in an anterior-posterior direction to include over the length of each molar-bicuspid region a portion of greater thickness than the remainder of said bottom wall for minimizing potential shock resulting from a blow to the lower jaw, said bottom surface of said bottom wall having an even surface curved in the anterior-posterior direction over said thickened portions in each said molar-bicuspid region.

4,337,766

VALVES

Leonard J. Feathers, Sussex, England, assignor to Chubb Panorama Limited, Bognor Regis, England

Filed May 21, 1980, Ser. No. 151,866
Int. Cl.[3] A62B 7/04
U.S. Cl. 128—204.26 4 Claims



1. Breathing apparatus comprising a source of pressurized breathing gas; breathing interface means; means defining a gas flowpath from said source to said interface means and including a demand regulator for controlling the flow of gas from the source to the interface means in accordance with the respiratory demands of a user of the apparatus, the regulator comprising means defining a first chamber, means defining an inlet port connected to said source and opening to said first chamber, means defining an outlet port opening to said first chamber and leading to said breathing interface means, a valve head disposed within said first chamber and closely surrounded at its periphery by the wall of said first chamber so as to maintain the head generally concentric therewith, means defining a seating for the valve head whereby in a first position the head seats over said outlet port to close that port to gas flow, an elongate stem rigidly secured at one end to the valve head and extending generally coaxially therewith through said outlet port with clearance relative to said outlet port sufficient to permit the rigidly interconnected assembly of said valve head and stem to perform angular tilting movement as a unit to tilt said valve upon its seating away from its said first position thereby to open said outlet port to gas flow, means defining a second chamber communicable with said first chamber through said outlet port, and means responsive to the pressure within said second chamber and adapted to flex inwardly of said second chamber in response to inhalation by a user of the apparatus, said stem extending away from said valve head and through said second chamber to be engageable at its other end by said pressure-responsive means such that said inward flexure of the pressure-responsive means displaces said other end of the stem to tilt said valve head away from its said first position as aforesaid directly through the agency of said stem, and said inlet port opening to said first chamber at a location which is to the same side of said valve head as said outlet port in the sense that when said valve head is tilted away from its said first position to open said outlet port as aforesaid gas can flow through said first chamber from said inlet port to said outlet port and thence to said breathing interface means without passing between the periphery of said valve head and the surrounding wall of said first chamber.

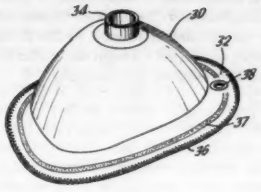
4,337,767

DISPOSABLE ANESTHESIA MASK COVER

James I. Yahata, 20 Lee Ter., Short Hills, N.J. 07078

Filed Jan. 15, 1981, Ser. No. 225,210
Int. Cl.[3] A61M 17/02
U.S. Cl. 128—206.28 5 Claims

1. A disposable cover adapted to be inserted within an anesthesia mask having a body portion with a peripheral edge and a central circular inlet opening, said cover comprising a composite member having a pliable peripheral portion surrounding a central more rigid portion, said pliable portion adapted to overlap the peripheral edge of said mask, said more rigid portion being shaped to conform to the inside surface of the body portion of said mask and having tubular projection means alignable with said inlet opening and sized with an outside



diameter to be frictionally engaged in said inlet opening and thereby hold said cover within said anesthesia gas mask.

4,337,768

POLYVINYL CHLORIDE SHEET AND METHOD OF MAKING THE SAME

Kenji Hatada, and Hiroaki Kobayashi, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,581
Claims priority, application Japan, Feb. 26, 1980, 55/22270
Int. Cl.[3] A61M 5/14
U.S. Cl. 128—214 D 9 Claims

1. A polyvinyl chloride sheet comprising an uncrosslinked portion having on a surface thereof a crosslinked layer having a thickness of about 0.05 to about 2 microns, said crosslinked layer having a degree of chlorination of about 45% or less as compared to the degree of chlorination of the uncrosslinked portion of the sheet, and said sheet having a heat shrinkage of about 1% or less.

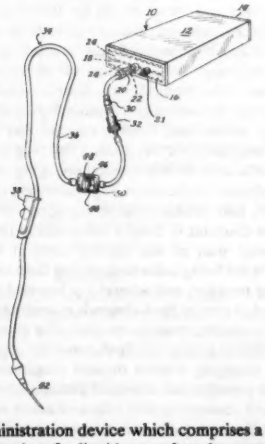
7. A blood bag comprising a polyvinyl chloride bag made from the sheet of claim 1, and with anticoagulation agents in said bag containing sodium citrate as a main constituent.

4,337,769

PRESSURE INFUSION MODULE

Raymond G. Olson, Niles, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 1, 1980, Ser. No. 174,489
Int. Cl.[3] A61M 5/00
U.S. Cl. 128—214 F 20 Claims



1. A liquid administration device which comprises a flexible, flat collapsible container for liquid, an outlet tube communicating with said container and a rigid housing enclosing said

container with said outlet tube projecting outwardly therefrom, the improvement comprising, in combination:

flexible, compressed cellular material positioned within said housing and exerting pressure on said container tending to urge said container toward its flat collapsed position and to expel said liquid through said outlet tube when any such liquid is present in the container.

4,337,770

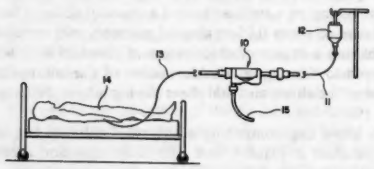
FLOW REGULATING DEVICE FOR ARTERIAL CATHETER SYSTEMS

James E. Young, 2080 E. 4675 South, Salt Lake City, Utah 84117; Ralph S. Walker, 9767 N. 6530 West, Highland, and James R. Chidester, Rte. 1, Box 150 B, American Fork, both of Utah 84003

Division of Ser. No. 46,234, Jun. 7, 1979, Pat. No. 4,278,083. This application Apr. 9, 1981, Ser. No. 252,360

Int. Cl.[3] A61M *5/00*

U.S. Cl. 128—214 R 12 Claims



1. A flow regulating device which provides a continuous regulated flow of a medical fluid to an intravenous catheter system used in monitoring arterial functions and in the infusion of medical fluids to an artery or vein, and which also provides for an intermittent, manually controlled, larger flushing flow of fluid to the catheter system, said device comprising a control member having an inlet means adapted to be connected to a source of a medical fluid and an outlet means adapted to be connected to an intravenous catheter; a first passage connecting said inlet and outlet means for fluid flow communication therebetween, said first passage at least in part comprising a section of flexible conduit fitting coaxially over a cylindrical, hollow extension which extends from said outlet means to about the midsection of said flexible conduit; valve means comprising a substantially cylindrical plug member positioned coaxially within said flexible conduit and having a flexible conduit engaging portion around the plug member intermediate its ends, said flexible conduit engaging portion being positioned adjacent to the extending end of said cylindrical, hollow extension, said flexible conduit engaging portion also being of sufficient diameter to form a substantially flow tight seal with the interior wall of said flexible conduit when the flexible conduit is not being deformed, so that fluid cannot flow around said plug member, and whereby when said flexible conduit is deformed, it creates flow channels extending across the flexible conduit engaging portion on said plug member, so that said larger, flushing flow of fluid can flow around said flexible conduit engaging portion on said plug member and through said first passage; and a second passage by-passing said valve means and connecting said inlet and outlet means, said second passage containing flow restriction means which limits the flow of fluid therethrough, under a given pressure, to a desired amount.

4,337,771

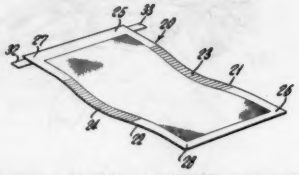
CONFORMABLE DISPOSABLE DIAPER HAVING REINFORCED PORTIONS

Heinz A. Pieniak, Chicago, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 872,860, Jan. 27, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,336

Int. Cl.[3] A41B *13/02*

U.S. Cl. 128—287 9 Claims



1. A unitary disposable diaper comprising; a first outer layer in the form of a moisture-impervious backing, an absorbent batt positioned in superposed relationship with respect to said backing, a second layer in the form of a moisture-pervious facing positioned in superposed relationship with respect to said batt, side and end margins formed by said batt being shorter and narrower than said first and second outer layers, an elongated elastic ribbon member disposed along substantially the entire length of at least one margin of the diaper, said ribbon member being secured in said margin, said member being secured in the central region of the margin to gather said region, and said member being secured at at least one end of the margin substantially continuously from the end of the central region to an outermost edge of the diaper, and at least one reinforced corner portion provided by said secured end, said secured end being effectively inelastic.

4,337,772

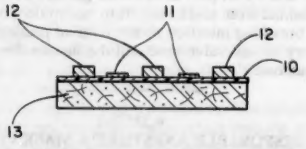
ADHESIVE BACKED SANITARY NAPKIN

Robert J. Roeder, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 6, 1981, Ser. No. 241,252

Int. Cl.[3] A61F *13/16*

U.S. Cl. 128—290 R 5 Claims



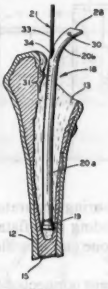
1. A sanitary napkin with a body facing surface and a garment facing surface comprising in combination an absorbent batt, a fluid impermeable baffle positioned between the batt and the garment of the wearer and adhesive attachment means on the garmentfacing side said attachment means including a plurality of discrete portions of pressure sensitive adhesive terminating before the ends of the garment facing surface at least partially separated by discrete portions of nonpressure sensitive adhesive having a thickness two to ten times that of the pressure sensitive adhesive.

4,337,773

METHOD OF AND DEVICE FOR PLACING A BARRIER IN A CAVITY PROVIDED IN A BONE SHAFT

Demetrios D. Raftopoulos, 3703 Cherrywood La., Toledo, Ohio 43615, and James D. Baril, 465 Canal Ct., Waterville, Ohio 43566

Filed Oct. 20, 1980, Ser. No. 198,585
Int. Cl.³ A61B 17/32; A61F 1/00
U.S. Cl. 128—305 5 Claims



3. A device for positioning a plug at an exact depth in a cavity formed in a femur shaft opening into the intramedullary canal, comprising:

a. A die for cutting and retaining the plug;

b. An elongated hollow body having an open end for detachably connecting the die thereto;

c. A scale defined on said body for determining the depth at which the plug may be released from said device;

d. Means for detachably connecting said die to said hollow body; and

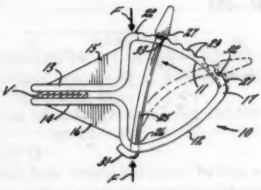
e. Means for releasing the plug from said die.

4,337,774

MICRO SURGICAL CLIP

Alfred R. Perlin, Highland Park, Ill., assignor to Metatech Corporation, Northbrook, Ill.

Continuation-in-part of Ser. No. 915,439, Jun. 14, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,192
Int. Cl.³ A61B 17/12
U.S. Cl. 128—325 3 Claims



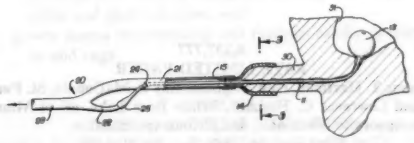
1. A surgical clip for clamping of small blood vessels comprising first and second arms arranged in opposition to one another terminating in a pair of opposed generally flat and smooth jaws, the arms being integrally joined at one end and merging with structural continuity with one another free of any abrupt reduction in cross sectional thickness in the region of joining, the arms being formed of a springy material for movement toward and away from one another, the arms being outwardly sprung so that the jaws tend to occupy positions spaced from one another for interposition of a blood vessel between them, the first arm having along its outer edge a cam track which is divergently angled with respect to the second arm, a cam follower arm swingably anchored in a fixed position on said second arm and extending bridgingly to the first arm and having at its end a cam follower member riding upon the cam track and projecting uniformly outwardly from the first arm along the entire cam track for convenient fingertip manipulation, the cam track being so shaped and oriented that as the cam follower member is advanced progressively along the cam track between a jaw-releasing position and a jaw-clamping position the arms are cammed toward or allowed to move away from one another so that the jaws apply a desired degree of clamping force to the blood vessel, said cam track having formed thereon a closely spaced series of shallow detent recesses in the path of the cam follower member and along which the cam follower member may be manually pressed by substantially equal light manual pressure in opposite directions to adjust the clamping positions of the jaws while sensing the number of clicks as a measure of the distance traversed, the cam follower arm being formed of a resilient rod mounted cantilever-fashion on said second arm so that when the cam follower arm is flexed and then manually released the cam follower member tends to move automatically to a predetermined position on the cam track.

4,337,775

CATHETER DRAINAGE AND PROTECTION UNIT

Yale B. Cook, Sun Valley, and Charles R. Brooks, Manhatten Beach, both of Calif., assignors to Irving Levine, Calabassas, Calif.

Filed Nov. 24, 1980, Ser. No. 209,840
Int. Cl.³ A61M 25/00
U.S. Cl. 128—349 B 4 Claims



1. A catheter drainage and protection unit for draining fluids from the male urethra comprising:

(a) a cannula having a distal portion adapted for insertion through the male urethra into the bladder, said cannula having a draining end for the drainage of fluid;

(b) expandable means for securing said cannula in place within the urethra, said expandable means being integral with the distal end of said cannula;

(c) a flexible cap having an exit port concentrically disposed about the draining end of said cannula and a body engaging portion integral therewith;

(d) a drainage assembly comprising a central drainage tube and first and second branch tube members in communication with said central drainage tube, said first branch tube being coupled to the exit port of said cap and concentrically receiving the draining end of said cannula therethrough, the draining end of said cannula being disposed through an aperture in the wall of said first branch tube and being coupled to the second branch tube of said central drainage tube; and

(e) means for sealing the couplings between said cap and cannula, and said central drainage tube.

4,337,776

IMPEDANCE MEASURING PACER

Christopher N. Daly, Bilgola Plateau; Michael S. Hirshorn, Darling Point; David K. Money, Pennant Hills, and Loraine K. Holley, Rockdale, all of Australia, assignors to Telectronics Pty. Ltd., Australia

Filed Aug. 29, 1980, Ser. No. 182,820
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PT 25 Claims

1. A system for measuring pacer electrode impedance comprising a pacer including means for delivering stimulating

pulses to a connected electrode, and externally controlled means for causing at least some of said stimulating pulses to be delivered in a sequence having decreasing amplitudes; and a

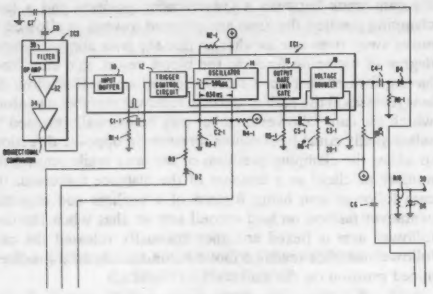


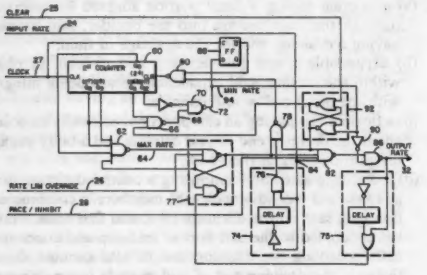
chart associated with said pacer which depicts electrode impedance as a function of the number of said at least some stimulating pulses required for the amplitudes thereof to decrease by a predetermined factor.

4,337,777

RATE LIMITED PACER

Jerome T. Hartlaub, New Brighton; Ray S. McDonald, St. Paul, and Lawrence C. Hudziak, White Bear Lake, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 24, 1980, Ser. No. 220,204
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 PG **4 Claims**



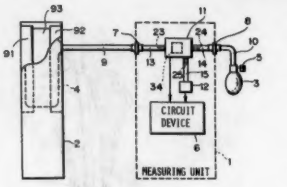
1. A rate limited pacer comprising:
an oscillator for providing clock pulses at a clock rate;
memory means for storing parameter data;
pacer logic means for producing an input rate signal in response to stored parameter data and said clock pulses; and
rate limit logic means responsive to said input rate signal and said clock pulses for producing an output rate signal equal to said input rate signal if said input rate signal is between an upper maximum rate limit and a lower dropout rate limit and for producing an output rate substantially equal to said maximum rate limit if said input rate signal exceeds said maximum rate limit and for producing an output rate at a minimum rate if said input rate is lower than said dropout rate.

4,337,778

BLOOD PRESSURE MEASURING APPARATUS

Abe Akira, Takatsuki; Shoji Kimura, Kameoka, and Miyawaki Yoshinori, Yawata, all of Japan, assignors to Omron Tateisi Electronics, Inc., Kyoto, Japan

Filed Jul. 15, 1980, Ser. No. 169,202
Claims priority, application Japan, Aug. 1, 1979, 54/98843
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—680 **11 Claims**



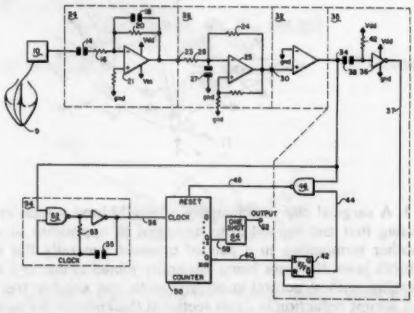
1. Blood pressure measuring apparatus comprising
an occluding cuff including an inflatable bladder,
an air guiding passage one end of which is connected to said bladder,
air pressure control means connected to the other end of said passage for inflating or deflating said bladder through said passage,
a microphone within said passage for sensing Korotkoff sounds which are propagated through said passage from said bladder and for generating Korotkoff sound signals,
pressure transducer means for sensing the applied pressure within said bladder and for generating pressure signals, and
circuit means operative in response to said Korotkoff sound and pressure signals to measure the systolic and diastolic blood pressures of a patient whose blood pressure is to be measured.

4,337,779

PHYSIOLOGICAL EVENT DETECTOR

Richard P. Spevak, Moundsview, and Lynn D. Hansen, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 11, 1980, Ser. No. 176,900
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—691 **3 Claims**



1. An improved physiologic waveform discriminator for detecting the mechanical pumping action of the heart based upon an impedance plethysmograph signal produced by an impedance plethysmograph coupled to the heart for producing a time varying electrical plethysmograph signal determined by the instantaneous volume of heart, wherein said improvement comprises;

frequency selective means for amplifying passband components of said plethysmograph signal for producing a passband signal;

time measuring circuitry activated when said passband components of said plethysmograph signal exceed a predetermined level for measuring the time period duration that said passband components of said plethysmograph signal exceed said predetermined level; and,

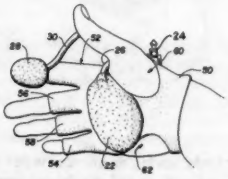
output circuitry for producing an output detection signal when said time period duration exceeds a preset minimum duration.

4,337,780

MUSCLE TESTING APPARATUS

Glen F. Metrick, 2366 E. Mall Dr., Apt. 515, Ft. Myers, Fla. 33901

Filed May 9, 1980, Ser. No. 148,307
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—774 **8 Claims**



1. An apparatus for objectively evaluating the amount of pressure needed to reach the pre-breaking point of a muscle of an individual during the course of a muscle strength test comprising:

first pressure sensitive means for sensing the pressure applied to a muscle;

second pressure sensitive means for sensing the pressure applied to a muscle;

pressure responsive means for indicating the pressure sensed by said first or second pressure sensitive means; and

means interconnecting said first and second pressure sensitive means to said pressure responsive means for selectively interconnecting said first or said second pressure sensitive means to said pressure responsive means.

4,337,781

ROLLER SUPPORT FOR CAGE SWEEP MECHANISM

Charles F. Brundage, Lenexa, Kans., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 31, 1980, Ser. No. 135,980
Int. Cl.³ H01D *41/12*
U.S. Cl. 130—27 H **2 Claims**

1. In an axial flow rotary harvester having a foraminous cylindrical cage, a threshing rotor within said cage supported for rotation about an axis and a cage sweep mechanism for preventing an accumulation of threshed material on the upper exterior of the cage characterized by

a pair of parallel support rails above said cage extending axially relative thereto,

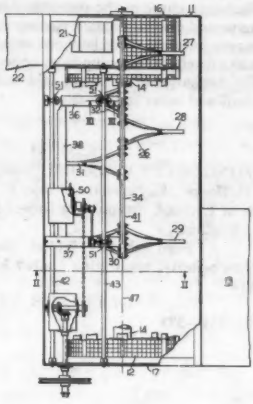
a cage sweep carriage presenting a plurality of axially spaced scraper fingers adjacent the upper exterior surface of said cage,

two pairs of roller members supporting said carriage on said rails, the roller members of each pair being spaced from one another in the direction of said axis,

a radially inward facing cylindrical bearing surface on each of said roller members,

shaft members on said carriage individually mounting said roller members, each shaft member having a radially outward facing cylindrical bearing surface in cooperative engagement with the cylindrical bearing surface of its associated roller member,

a helical recess in the cylindrical bearing surface of each of said shaft members, said recesses extending axially beyond the cylindrical bearing surfaces of the associated roller



members and inducing egress of foreign particles from between the engaging cylindrical bearing surfaces of said roller and shaft members, and

power means reciprocating said carriage axially in relation to said cage.

4,337,782

CORN AND CEREAL THRASHER

Jose T. Da Silva, Ribeirao Preto, Brazil, assignor to Cia Penha de Maquinas Agricolas-Copemag, Sao Paulo, Brazil

Filed May 22, 1981, Ser. No. 266,215
Int. Cl.³ A01D *9/00*
U.S. Cl. 130—30 E **4 Claims**

1. A corn and cereal thrasher comprising:

a vertical casing,

a cylindrical screen in said casing with a space between said screen and said casing,

a rotor in said cylindrical screen and coaxial therewith, said rotor comprising from bottom to top a helicoidal elevator portion, thrashing loops, thrashing blades and a radial fan,

means for driving said rotor, an inclined plate at the lower end of said cylindrical screen and a horizontal plate below said inclined plate with a space therebetween,

an input chute at one side of said casing opening into said space between said horizontal plate and said inclined plate,

a discharge chute at the opposite side of said casing to receive and discharge grain passing through said cylindrical screen into said space between said screen and said casing, and a discharge opening in an upper portion of said casing for discharge of air from said radial fan together with chaff and other light waste.

4,337,783

FORMING SHEET FROM RECONSTITUTED TOBACCO

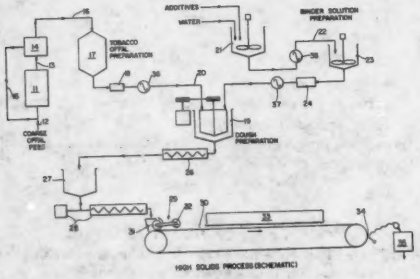
John D. Hooper, Keynsham, and John F. Britton, Bishopsworth, both of England, assignors to Imperial Group Limited, London, England

Filed Feb. 3, 1981, Ser. No. 231,145

Claims priority, application United Kingdom, Feb. 9, 1980, 8004414

Int. Cl.³ A24B *3/14*

U.S. Cl. 131—375 **7 Claims**



1. A method of forming a continuous tobacco sheet comprising the steps of

(a) forming a slurry comprising 35–60% by weight of ground tobacco particles having a particle size of less than 250 microns, 4–10% by weight of binder and 30–60% by weight of water,

(b) extruding the slurry between a pair of contra-rotating rollers onto an endless casting conveyor to form an extruded sheet thereon wherein one of the contra-rotating rollers supports the casting conveyor and

(c) drying the extruded sheet on the casting conveyor.

4,337,784

METHOD FOR CLEANING FLOOR SURFACES WITH HIGH PRESSURE WATER JETS

William G. Goerss, Fenton, Mich., assignor to N L B Corp., Wixom, Mich.

Division of Ser. No. 934,756, Aug. 21, 1978, Pat. No. 4,219,155. This application May 1, 1980, Ser. No. 145,392

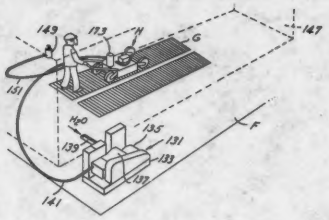
Int. Cl.³ B08B *3/02*

U.S. Cl. 134—34 **1 Claim**

1. A method for removing paint from floors and floor gratings by using a cleaning device having a plurality of high pressure water nozzles mounted within a hollow spray enclosure and discharging a stream of water under high pressure through said water nozzles towards a floor and floor grating wherein said cleaning device includes a fixed spindle mounted to said hollow spray enclosure, with said water nozzles being mounted to a tubular body which is rotatably mounted on said spindle, a dump valve including a movable valve element which is normally biased to a first position to direct said water through an orifice into said hollow spray enclosure, a pneumatic power means rotatably driving said tubular body, and said pneumatic power means being operably connected to said dump valve for shifting said valve element to a second position, to close said orifice and direct all of said water through a vertical bore within said spindle comprising:

directing said stream of high pressure water through said orifice into said hollow spray enclosure when said valve element is in its first position and said tubular body is not being driven for rotation by said pneumatic power means;

directing all of said stream of high pressure water downwardly through said vertical bore within said fixed spindle and into a plurality of radial discharge ports at the lower end of said vertical bore only when said pneumatic power means is rotatably driving said tubular body and said valve element is in its second position;



said tubular body having an annular water chamber in close proximity to said radial discharge ports, said annular water chamber receiving said downwardly directed stream of high pressure water and directing said stream of high pressure water radially outward through a plurality of angularly disposed water nozzles whereby high pressure water jets impinge onto the floor and floor grating;

permitting movement of high pressure water between said tubular body and said spindle to thereby lubricate the rotative movement of said tubular body on said spindle; and

movably transporting said water jets over and along surface portions of said floor and floor grating for forcefully and operatively impinging upon the surface portions of said floor and floor grating.

4,337,785

METHOD USING COPPER-COPPER-ALLOY TUBE FOR WATER SUPPLY

Shiro Sato, Aichi, and Kiyoji Sagisaka, Nagoya, both of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Division of Ser. No. 643,769, Dec. 23, 1975, abandoned. This application Mar. 26, 1979, Ser. No. 24,178

Claims priority, application Japan, Dec. 23, 1974, 49/147791

Int. Cl.³ E03B *7/04*; F24D *12/00*

U.S. Cl. 137—1 **9 Claims**

1. The method of carrying water for human consumption without contaminating the water, comprising:

passing water for human consumption, at a temperature below 90° C., through a copper base alloy tube consisting essentially of 0.05–2.8% by weight magnesium, 0.1% calcium and the balance essentially copper.

4,337,786

VARIABLE RATE FERTILIZER INJECTION SYSTEM

Richard G. Myers, and James P. Stuckey, both of Fremont, Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.

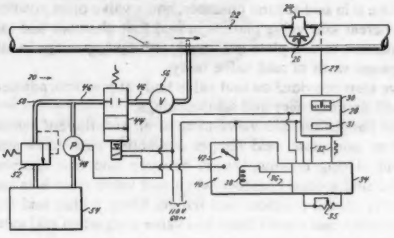
Filed Jun. 23, 1980, Ser. No. 162,085

Int. Cl.³ G05D *11/13*

U.S. Cl. 137—3 **7 Claims**

7. A method for injecting an additive into a liquid carrying irrigation line to maintain a constant proportional mix of said

additive as the rate of liquid flow therethrough varies and shutting the system down upon failure of the injection system including the steps of measuring the rate of liquid flow in the irrigation line, producing a triggering pulse indicating that a predetermined amount of liquid has flowed through the line, injecting a predetermined amount of additive through an injection line and into the irrigation line in response to the triggering pulse, opening a solenoid in the injection line to permit a



predetermined amount of additive to flow therethrough, continuously pumping the additive into the injection line, returning the additive to a reservoir through a pressure relief valve and line when the solenoid is closed and shutting the system down should the time between injections vary from a preselected range including sensing the rate of additive flow in the injection line, timing the on and off periods of additive flow, and operating a contact should the on or off period exceed a predetermined limit.

4,337,787

PRESSURE REGULATING HYDRAULIC CIRCUIT AND VALVE

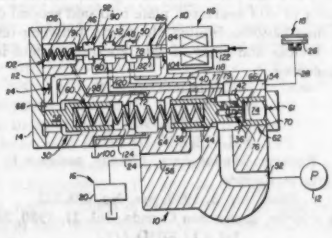
Sammy J. Rhodes, deceased, late of Aurora, Ill. (by The Old Second National bank of Aurora, executor), assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00270, § 371 Date Mar. 12, 1980, § 102(e) Date Mar. 12, 1980, PCT Pub. No. WO81/02641, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 12, 1980, Ser. No. 197,832

Int. Cl.³ G05D *11/13*

U.S. Cl. 137—101 **13 Claims**



1. A hydraulic circuit **(10)**, comprising:

fluid supply means **(12)** for delivering pressurized fluid flow;

first and second means **(16,18)** for operating at first and second preselected fluid pressure levels of fluid flow thereto, respectively, said first preselected pressure level being less than said second preselected pressure level;

first and second fluid pathways **(24,28)** establishing fluid flow from said fluid supply means **(12)** to said first and second means **(16,18)**, respectively;

a main valve element **(30)** having a bore **(44)**, a spool **(40)** and inlet and outlet grooves **(36,38)**, said spool **(40)** being movable in said bore **(44)** from a first **(62)** toward a second **(63)** position in response to fluid pressure in said second fluid pathway **(28)** being at said second preselected pressure level and from said second **(63)** toward said first **(62)** position in response to fluid pressure in said second fluid pathway **(28)** being at a reduced pressure level relative to said second preselected pressure level, said inlet groove **(36)** being positioned in fluid communication with said fluid supply means **(12)** and, at said first and second positions **(62,63)**, in controlled fluid communication with said outlet groove **(38)** through said first and second fluid pathways **(24,28)**, respectively, said outlet groove **(38)** being positioned in fluid communication with said first means **(16)**; and

pilot means **(32)** for automatically initiating a fluid pressure level at less than said second preselected pressure level in said second fluid pathway **(28)** and opening said first fluid pathway **(24)** to fluid flow in response to fluid flow being blocked from said fluid supply means **(12)** into said second fluid pathway **(28)** and for simultaneously blocking fluid flow through said first fluid pathway **(24)** and initiating fluid flow through said second fluid pathway **(28)** in response to a preselected input signal, said pilot means **(32)** including a pilot valve element **(34)** movable between a first position at which said inlet groove **(36)** is positioned in fluid communication with said outlet groove **(38)** through said pilot valve element **(34)** and a second position at which said inlet groove **(36)** is blocked from fluid communication with said outlet groove **(38)** through said pilot valve element **(34)**.

4,337,788

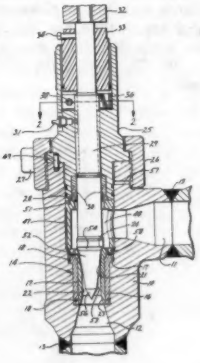
HIGH PRESSURE VALVE

Fritz O. Seger, Mission Viejo, Calif., assignor to Smith International Inc., Newport Beach, Calif.

Filed Feb. 2, 1981, Ser. No. 230,392

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **21 Claims**



17. A high pressure adjustable choke comprising:

a valve body having a side inlet passage and an end outlet passage having a diverging portion;

a removable seat assembly mounted in the body in alignment with the outlet passage, including a support sleeve slidably fitted into the valve body; means for sealing between the support sleeve and the valve body; and an erosion resistant sleeve having a conical valve seat tapering inwardly at an angle of about 30° at its inlet end, a conical converging passage having a taper of about 10° downstream from the valve seat, a cylindrical passage immediately downstream from the converging passage, and a diverging passage immediately downstream from the cylindrical passage aligned with the diverging portion of the outlet passage;

an axially movable stem aligned with the seat assembly, including an erosion resistant plug having a conical seal

surface near its upstream end having a taper of about 30° for engaging the valve seat in the sleeve and a converging conical control surface downstream from the seal surface with the same taper as the converging passage;

means for moving the stem between a closed position with the seal surface on the plug engaging the valve seat in the sleeve and a fully open position wherein the smaller end of the control surface is within the converging passage, the flow cross section of the annulus between the control surface of the plug and the converging passage in the fully open position being about the same as the flow cross section through the cylindrical passage and including a clearance between the control surface and the converging passage when the seal surface engages the valve seat;

the length of the control surface being greater than the length of the converging passage and greater than the length of the stroke of the stem between the open and closed positions, the length of the converging passage in the sleeve being less than the stroke of the stem between the open and closed positions, and the total length of the converging passage and the cylindrical passage being greater than the length of the control surface on the plug so that a vena contracta of fluid flowing through the valve can occur in the liner sleeve downstream from the valve seat in all positions of the valve stem between the closed position and the fully open position and including the fully open position;

a removable bonnet surrounding the stem for retaining the stem in the valve body;

a seal between the valve bonnet and the valve body; and

a removable cage between the bonnet and seat assembly lining the valve body and including a side opening aligned with the inlet passage.

4,337,789

SHUT-OFF VALVE FOR INTERRUPTING A FLOW OF A FLUID THROUGH A PIPELINE

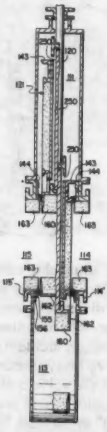
Pietro Lonardo, Genoa, Italy, assignor to Hermann Rappold & Co. GmbH, Düren, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,752

Claims priority, application Italy, Apr. 9, 1979, 12541 A/79

Int. Cl.³ F16K *3/00, 49/00*

U.S. Cl. 137—340 **7 Claims**



1. A shut-off valve for interrupting a flow of a fluid through a pipeline, particularly a flow of high temperature air in a gas main associated with a blast furnace, said valve comprising:

a valve body adapted to be connected to pipes of a pipeline, said valve body having a pair of spaced walls having openings aligned with each other and with the pipes when said valve body is connected thereto, said openings defining a valved passageway, said valve body having therein first and second chambers on opposite sides of said openings;

a valve plate and a plate connected to said valve plate, said plate having therethrough an aperture, said valve plate and said plate being movably mounted within said valve body for simultaneous movement between a valve closed position, whereat said valve plate extends between and interrupts communication between said openings and said plate is in said second chamber, and a valve open position, whereat said valve plate is in said first chamber and said aperture in said plate is aligned with said openings in said spaced walls of said valve body;

valve seats provided on said valve body at positions adjacent said first chamber and said openings;

outer flanges on said valve plate at an end thereof remote from said plate, said flanges contacting said valve seats and closing communication between said first chamber and said second chamber when said valve plate is in said valve closed position, said flanges being within said first chamber and spaced from said valve seats when said valve plate is in said valve open position, thereby enabling communication between said first and second chambers;

flanges extending outwardly from opposite major surfaces of said valve plate;

a pair of seal devices, each said seal device being positioned within said valve body adjacent a respective said opening;

means for urging each said seal device toward a respective said flange when said valve plate is in said valve closed position and toward a respective side of said plate, at a location surrounding said aperture therein, when said valve plate is in said valve open position;

passage means in said valve plate, said passage means opening at a first end thereof into said first chamber outwardly of said outer flanges and opening at a second opposite end thereof freely outwardly of one of said flanges at a position remote from said first chamber;

cooling means for introducing a gaseous cooling fluid into said first chamber, whereby when said shut-off valve in the closed position said outer flanges contact said valve seats to prevent said cooling fluid from passing between lateral clearances exterior of said valve plate into said second chamber, said cooling fluid passing through said passage means in said valve plate into said second chamber, and whereby when said shut-off valve is in the open position said cooling fluid passes between said outer flanges and said valve seats through said lateral clearances exterior of said apertured plate into said second chamber and then between limited clearances between respective seal devices and sides of said apertured plate into said passageway.

4,337,790

FILTERING DEVICE

Daniel C. Buchner, Wallaceburg, Canada, assignor to Waltec, Inc., Ontario, Canada

Filed Nov. 3, 1980, Ser. No. 203,232

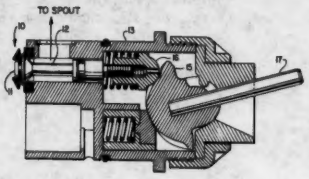
Claims priority, application Canada, Jul. 21, 1980, 356640

Int. Cl.³ E03D *1/32*

U.S. Cl. 137—550 **3 Claims**

1. In a faucet of the type having a removable cartridge member receivable in an underbody member, said cartridge member carrying a cam member, at least one cam follower member and a valve member actuated by the cam follower member upon movement of the cam to control fluid communication between a spout and a source of water, a passage in said underbody member through which water flows from said source to said spout, the improvement comprising: (1) an axially extending enlarged head portion formed at one end of said valve member, (2) a filter member secured to said head portion of said valve member and movable therewith within said passage to prevent large particles from entering said faucet, (3)

said filter member including an inner annular member having a through hole, whereby said filter member is secured to said



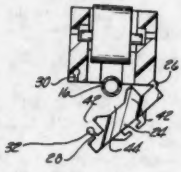
head portion of said valve member by forcing said filter member over said head portion in a detachable manner so that the filter member can be easily removed.

4,337,791

FLOW REGULATOR ASSEMBLY

James H. Tech, Battle Creek; Mary J. LaFountain, Marshall, both of Mich., and Virginia M. Van Sickle, Glen Ellyn, Ill., assignors to La-Van Tech Development Corp., Marshall, Mich.

Filed Nov. 17, 1980, Ser. No. 207,129
Int. Cl.³ F16K 7/06
U.S. Cl. 137—556 4 Claims



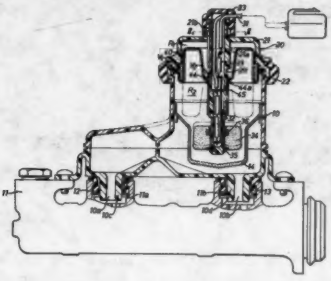
1. A flow regulator assembly for controlling fluid flow in flexible tubes comprising: a body member having parallel spaced side walls spaced to opposite sides of a wall portion having a surface for engaging one side of a flexible tube, a roller member having an axle extending from opposite ends of said roller, the ends of said axle being disposed in elongated and facing recesses formed in the interior surfaces of said side walls to maintain said roller attached to said body member, said surface of said wall portion and said elongated recesses being disposed at an angle to each other, said roller being rotatable to move said axle to selected positions in said recesses and to move said roller into engagement with the tube and depress the tube against said surface to restrict the passage in the tube in proportion to the amount of rotation of said roller member, means formed in said recesses and engageable with said axle of said roller member to resist rotation of said roller member from said selected position, indicator means indicating the position of said roller member and the corresponding fluid flow in said tube, hinge means formed as a unit with said wall portion and one of said side walls to permit movement of said wall portion from an open position permitting attachment of said body member to a selected point intermediate opposite ends of the tube to position said tube between said roller member and said surface, and means for latching said wall portion to the other of said side walls when said wall portion is in a closed position after said tube has been disposed in said body member, said body member, said wall portion, said hinge means and said latch means being molded as a unit of plastic material.

4,337,792

FLUID RESERVOIR FOR BRAKE MASTER CYLINDERS

Yoshihisa Nomura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 20, 1980, Ser. No. 161,335
Claims priority, application Japan, Jun. 29, 1979, 54-90580[U]
Int. Cl.³ F15B 7/10
U.S. Cl. 137—558 4 Claims



1. In a fluid reservoir for mounting on a brake master cylinder, comprising a casing for storing an amount of brake fluid therein, said casing having an upper opening, a cap member of elastic material detachably coupled over the upper opening of said casing, and a diaphragm seal member coupled within said cap member to close off brake fluid stored in said casing and to subdivide the interior space of said casing into an upper chamber vented through a portion of said cap member and a lower chamber located above the liquid surface of the brake fluid, said diaphragm seal member being provided at the outer periphery thereof with an inlet check valve assembly for permitting the flow of air from the upper chamber into the lower chamber and provided at the central portion thereof with an outlet check valve assembly for permitting the flow of air from the lower chamber into the upper chamber,

the improvement wherein said inlet check valve assembly comprises an annular valve seat in the form of a lower stepped portion formed on the inner peripheral wall of said cap member, a cylindrical retainer member of hard material integrally secured to the outer periphery of said diaphragm seal member and having an annular flange facing to said annular valve seat and an upper end resiliently engageable with an upper stepped portion formed on the inner peripheral wall of said cap member, an annular lip of elastic material integrally formed on the annular flange of said retainer member, and resilient means for biasing said retainer member toward the upper stepped portion of said cap member to press said annular lip into contact with said annular valve seat.

4,337,793

COPPER-ALLOY TUBE WATER SUPPLY

Shiro Sato, Aichi, and Kiyoji Sagisaka, Nagoya, both of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 643,769, Dec. 23, 1975, abandoned.
This application Mar. 26, 1979, Ser. No. 24,179
Claims priority, application Japan, Dec. 23, 1974, 49-147791
Int. Cl.³ E03B 7/04; F15B 1/00
U.S. Cl. 137—561 R 7 Claims

1. In a combination including potable water supply tubes in combination with a waterworks, the improvement wherein the tubes are made of a copper base alloy consisting essentially of 0.05–2.8% by weight magnesium, 0–1% calcium and the balance essentially copper.

4,337,794
SOLENOID VALVE ASSEMBLY

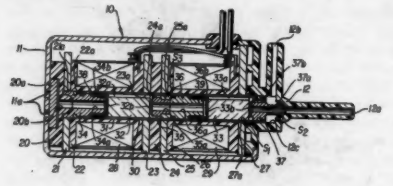
Minoru Yamanaka; Hideo Haneda, both of Toyota; Masatoshi Kato, Kariya, and Mitsuyuki Suzuki, Gamagori, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 20, 1980, Ser. No. 151,591

Claims priority, application Japan, Jun. 26, 1979, 54-087274[U]

Int. Cl.³ F15B *13/044*

U.S. Cl. 137—596.17 **4 Claims**



1. A solenoid valve assembly comprising first and second bobbins including solenoids which are co-axially supported by a housing;

first and second valve bodies slidably supported in each axial bore of the first and second bobbins and movable independently with respect to energized conditions of said solenoids;

an outlet port formed in the housing to receive control pressure from two different pressure sources applied to first and second inlet ports formed in the housing;

a first valve core of magnetic material positioned within said housing;

a second valve core of non-magnetic material positioned within said housing;

a third valve core of magnetic material positioned within said housing and secured to said second valve core;

a fourth valve core of non-magnetic material positioned within said housing;

a single sleeve of non-magnetic material secured to each of said valve cores wherein said valve cores are positioned within said axial bores of said bobbins;

means communicating with said outlet and said first and second inlet ports formed in said single sleeve and said valve cores via opposite ends of said single sleeve;

said first valve body comprising magnetic material axially movable and supported in said single sleeve between said first valve core and said second valve core wherein said first valve body is responsive to operation of said solenoid of said first bobbin independent of said solenoid of said second bobbin;

said second valve body comprising magnetic material axially movable and supported in said single sleeve between said third valve core and said fourth valve core wherein said second valve body is responsive to operation of said solenoid of said second bobbin independent of said solenoid of said first bobbin; and

means for biasing said valve bodies, respectively, in an axial direction.

4,337,795
SINGLE LEVER MIXING FAUCET

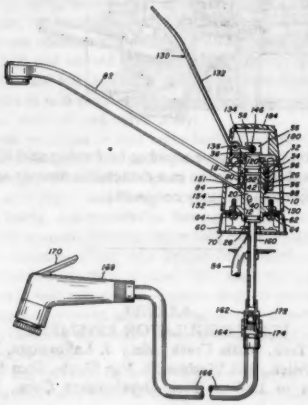
Pericles A. Argyris, and William R. Williams, both of Morgantown, W. Va., assignors to Sterling Faucet Company, Schaumburg, Ill.

Filed Apr. 28, 1975, Ser. No. 572,397

Int. Cl.³ F16K *11/02*

U.S. Cl. 137—625.17 **12 Claims**

1. A mixing faucet comprising a body having a through bore, hot and cold inlet ports in said body communicating with said bore, an outlet port communicating with said bore, a spindle mounted in said bore for rotary movement between hot and cold positions and for axial movement between open and closed positions, a pivot member rotatably mounted on the upper portion of said body, an operating handle pivotally mounted on said pivot member, a portion of said handle being operatively connected with the upper end of said spindle whereby upon pivotal movement of said handle in a vertical



plane said spindle is moved axially between open and closed positions and upon rotary movement of said pivot member in a horizontal plane said spindle is moved between said hot and cold positions, means on said pivot member adapted to cooperate with means on said spindle to limit the axial movement of said spindle in both directions.

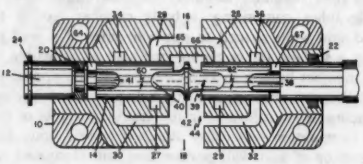
4,337,796
MULTIPLE FOUR-WAY CONTROL VALVE

Roland W. Bonney, Box 65, R.F.D. 1, Kennebunkport, Me. 04046

Filed Dec. 11, 1980, Ser. No. 215,272

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—625.17 **1 Claim**



1. A multiple four-way control valve comprising:

a valve housing;

a cylindrical bore defined within said valve housing;

an inlet bore defined within said valve housing;

first and second pressure channels defined within said valve housing communicating with said inlet port and said cylindrical bore, to allow the entrance of hydraulic fluid into said cylindrical bore;

first and second pressure grooves defined around said cylindrical bore of said valve housing communicating with said first and second pressure channels respectively;

an outlet port defined within said valve housing communicating into said cylindrical bore;

first and second relief channels defined in said valve housing, extending from said outlet port through said valve housing to said cylindrical bore;

first and second relief grooves defined around the inside of said cylindrical bore in said valve housing communicating with said first and second relief channels;

a first series of operation ports of like diameter defined in said valve housing arrayed in a first transverse plane to the axis of, and communicating with, said cylindrical bore;

a second series of operation ports of like diameter defined in said valve housing arrayed in a second transverse plane to the axis of, and communicating with, said cylindrical bore;

a spool member positioned in said cylindrical bore and being rotatably and axially movable within said cylindrical bore;

a central spool projection member extending around and projecting from said spool member with its outer periphery contacting said cylindrical bore;

first and second collar members protruding from said spool member and contacting said cylindrical bore, each spaced equidistant from said central spool projection, the inner portions of said first and second collar members extending, when said spool member is in a neutral position, to block said first and second pressure channels and said first and second pressure grooves, and the outer portions of which extend beyond said first and second relief grooves and said first and second relief channels, said first and second collar members defining a first, second, third and fourth cut-away section around said spool at their respective inner portion ends and outer portion ends, said second and third cut-away sections being separated by said central spool projection;

first and second slots defined upon said first collar member, and third and fourth slots defined on said second collar member, all in axial alignment, said first slot aligned with said first relief roove when said rotary spool is in a neutral position, said second slot aligned with said first pressure groove to empty said first pressure groove into said outlet chamber, said third slot positioned on said valve aligned with said second pressure groove to empty said second pressure channel into said outlet chamber; and said fourth slot aligned with said second relief groove;

seal means adapted to seal said spool in a fluid-tight relation in said housing within said cylindrical bore;

a second series of slots defined on said collar members to equalize pressure on said spool opposite each of said operation ports, each slot opposite one of said first, second, third and fourth slots with a plurality of cavities defined in the valve housing opposite each operation port, said cavities aligned with said second series of slots on said spool;

each of said slots in said first and second series of slots having a width of the diameter of one of said operative ports with its inside rear end terminating at a point contacting said cylindrical bore and its outside end opening into its respective cut-away section around said spool; and

said spool when in said neutral position and under pressure allows hydraulic fluid to pass through said first and second pressure channels around through said first and second pressure grooves, through said narrower cut-away second and third sections of said spool and out said outlet port while said spool is blocking all of said operation ports, said spool if moved into an active position where said central spool projection is aligned with and contacting said cylindrical bore, further closing off one of said pressure channels by a land on one of said collars while directing the pressure through said slot on the other collar to a rotationally selected operation port while relieving pressure on a corresponding selected operation port of the other series by venting it through a slot on the other collar to said relief channel and to said outlet port.

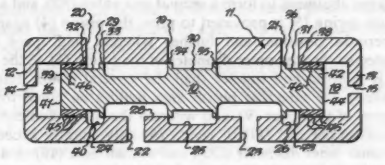
4,337,797

BIMETALLIC VALVE SPOOL

John T. Caruso, Kenmore, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Aug. 18, 1980, Ser. No. 178,778
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—625.48 **8 Claims**

1. In a valve having a spool member slidably mounted within a sleeve member, said sleeve member having an inwardly-facing cylindrical surface and penetrated by a plurality of ports through which fluid may flow, said spool member having a plurality of metering lands cooperating with said sleeve member ports such that the relative positions between said members may define metering orifices between said lands and ports through which fluid may selectively flow, the outwardly-facing surfaces of said lands being arranged in common imaginary cylinder, and wherein said members are formed of a relatively hard material, the improvement which comprises:



a bearing land provided on said spool member and adapted to slidably engage the facing proximate cylindrical surface portion of said sleeve member,

said bearing land having a diameter substantially equal to the diameter of said imaginary cylinder and being formed of a relatively soft material having hardness of from about R_b45 to about R_b100,

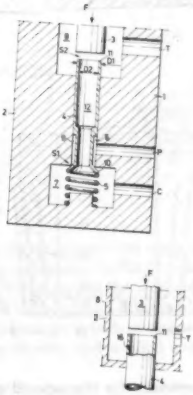
whereby the tendency of said members to gall at high relative velocities therebetween may be reduced.

4,337,798

CONVERTER FOR VALVES

Ted Zettergren, Kungsgarden 3402, 870 52 Nyland, Sweden

Filed Oct. 3, 1980, Ser. No. 193,535
Claims priority, application Sweden, Oct. 11, 1979, 7908452
Int. Cl.³ F16K *11/16*
U.S. Cl. 137—627.5 **3 Claims**



1. A converter for electrohydraulic or electropneumatic conversion, comprising a housing (2), a piston (4) movable in said housing (2), a pressure pin (3) reciprocatory by means of a magnet relative to the piston (4), a channel (P) for the supply of pressure medium, a control channel (C) for outflow and inflow of control pressure medium and a channel (T) for draining the converter, wherein the piston (4) is tubular and includes a channel (12) extending through the piston, which piston (4) runs in a cylinder bore (6) having uniform diameter, above and beneath which a respective upper and lower cavity (7, 8) are located, in the upper cavity (8) said pressure pin (3) is located and into which said drainage channel (T) opens, and into the lower cavity (7) the control channel (C) opens, wherein the

pressure channel (P) opens into said cylinder bore (6), at a tubular space (9) located between the piston and the cylinder bore wall, which space extends downward to a lower end of the piston (4) where the lower end of the piston has a preferably conically shaped widening (10) so that the widening and the transition of the lower cavity to the cylinder bore (6) form a first seat valve (S1), which is closed when the piston is in an uppermost position, and wherein the upper end (11) of the piston together with the free end of the pressure pin (3) make a planar abutment to form a second seat valve (S2), and a week return spring (5) is provided to press the piston (4) against its uppermost position, and further wherein said space (9) is formed so that the outer diameter of the piston (4), at the space (9) is uniform and smaller than the general piston diameter, whereby the effective piston area defines an equal top and bottom of the space (9), and wherein the outer diameter (D1) of said upper end (11) of piston (4) only slightly exceeds its coplanar inner diameter (D2), and a small hole (16) or a small slit is made through the piston wall close to the upper end (11) of the piston (4).

4,337,799

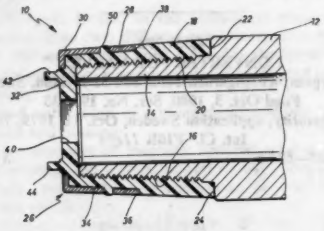
THREAD PROTECTOR

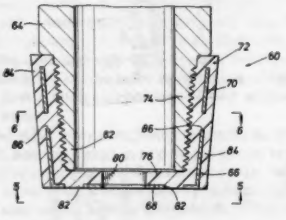
C. Roger Hoover, 7950 Ellinger, Houston, Tex. 77040

Continuation-in-part of Ser. No. 189,314, Sep. 22, 1980, abandoned. This application Apr. 10, 1981, Ser. No. 252,917

Int. Cl.³ B65D *59/06*

U.S. Cl. 138—96 T **7 Claims**





1. A thread protector for the tapered external threads of pipes, said thread protector comprising:

(a) a thread cap composed of synthetic plastic material and being formed to define tapered internal threads adapted to receive the externally threaded pin portion of a pipe, said thread cap defining an outer frusto-conical side wall;

(b) a metal cap being received about at least a portion of said thread cap and defining a frusto-conical side wall and a planar end wall flange forming a circular central opening, said side wall being formed to define a plurality of locking openings;

(c) said thread cap defining an end wall forming a central thread cap opening in substantially concentric relation with said central opening;

(d) a plurality of projections extending from said end wall of said thread cap within said circular central opening, said projections being oriented in substantially evenly spaced relation and adjacent said end wall flange for engagement by a straight tool to facilitate installation and removal of said thread protector; and

(e) a plurality of integral locking portions extending from said thread cap through said locking openings and establishing a mechanically interlocked relation between said thread cap and said metal cap.

4,337,800

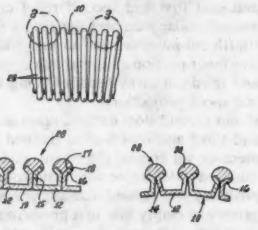
TWO PIECE EXTRUDED HOSE

Lennart L. Carlson, Irvine, and Douglas I. Holberg, San Clemente, both of Calif., assignors to Steward Plastics, Inc., Laguna Hills, Calif.

Filed Jul. 7, 1980, Ser. No. 166,344

Int. Cl.³ F16L *11/11*

U.S. Cl. 138—122 **3 Claims**



3. A flexible hose comprising:

an extruded plastic strip of channel-shaped cross section including a web forming the inside of the hose, said web having first and second sides, spaced flanges projecting radially outward from each of said first and second sides of said web, said legs substantially forming an I-beam arrangement with said web and flanges, said plastic strip being helically wound to form the hose, with the flanges of succeeding turns arranged in contiguous pairs and

the flanges being angularly flexible with respect to the webs such that the contiguous pairs of flanges are free to move apart at their innermost ends whereby, on application of axial tension, the adjacent webs of each turn are permitted to separate.

4,337,801

DEVICE FOR SHEDDING WARP YARNS IN A WEAVING LOOM

Hajime Suzuki, Anjo; Yoshifumi Umemura, Toyoake, and Shozo Ueda, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jul. 23, 1980, Ser. No. 171,376

Claims priority, application Japan, Jul. 26, 1979, 54-95860

Int. Cl.³ D03C *5/00*

U.S. Cl. 139—57 **6 Claims**

1. A device for shedding warp yarns in a weaving loom, comprising:

(a) cranks rotatable about rotational centers in synchronization with the weaving operation of said weaving loom;

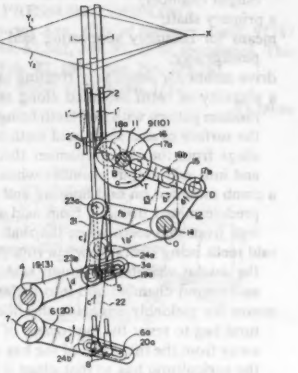
(b) synchronizing levers pivoted swingably around swinging centers;

(c) connecting rods operably connecting said cranks to said synchronizing levers via connecting pivots;

(d) synchronizing links operably linked with said synchronizing levers via linking pivots and linked with lift members for vertically moving heddle frames via linking pins; and

(e) wherein said synchronizing levers and said synchronizing links are so arranged that, when said connecting rods are located at their dead points, which correspond to the outermost positions of said heddle frames, and said rota-

tional centers of said cranks and said connecting pivots between said cranks and said synchronizing levers are aligned with first imaginary straight lines, one of said linking pivots between said synchronizing levers and said



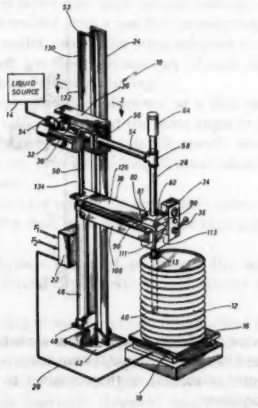
synchronizing links is near a second imaginary straight line which passes through the corresponding linking pin, while the corresponding synchronizing link is located at its dead point, and the corresponding swinging center.

4,337,802

METHOD AND APPARATUS FOR LIQUID FILLING OF CONTAINERS

Harry L. Kennedy; Prakash M. Kesaree, both of Freeport, and Abofazl Rahimzadeh, Lake Jackson, all of Tex., assignors to Velasco Scale Company, Inc., Freeport, Tex.

Filed Sep. 30, 1980, Ser. No. 192,497
Int. Cl.³ B65B *3/28*
U.S. Cl. 141—1 **18 Claims**



1. Liquid filling apparatus for subsurface filling of containers with liquid comprising:

a conduit for introducing the liquid into a container, said conduit being movable between a raised and a lowered position;

a valve to control the rate of flow of liquid through the conduit to such a container;

a first signal generator for generating a signal to initiate movement of the conduit from its raised position to its lowered position;

a second signal generator actuatable by movement of the conduit towards its lowered position, for generating a signal to actuate the valve to commence flow of liquid at a slow fill rate into such a container;

a delay mechanism actuatable by the signal from the second signal generator to trigger a fast fill rate dispensation of liquid after a predetermined interval;

a weight responsive device adapted to generate a first and a second control signal when the weight of the liquid in the container equals a first and a second cut-off weight, respectively, said first control signal being operable to initiate withdrawal of the conduit towards its raised position and to actuate the valve to return to a slow fill rate of dispensation of liquid through the conduit;

a wiper device for urging liquid adhering to the outside of the conduit toward such a container during withdrawal of the conduit; and

a third signal generator actuatable when the conduit has been raised a predetermined distance from such a container for generating a signal to stop further movement of the conduit,

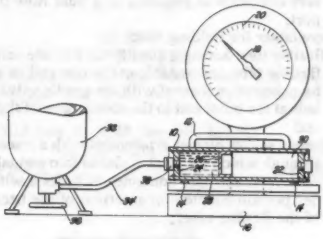
said second control signal, which is generated when the second cut-off weight of liquid within such a container is achieved, initiates the termination of flow of liquid from the conduit and the movement of the conduit to its raised position.

4,337,803

METHOD OF RECHARGING FIRE EXTINGUISHER BOTTLES

Anthony J. Monte, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,465
Int. Cl.³ B65B *1/32*
U.S. Cl. 141—2 **3 Claims**



1. A method of charging liquid fire suppressant and pressurized gas into a fire extinguisher bottle **52** equipped with a filler plug, said method being carried out with the use of two transfer cylinders **10, 66**, each having a floating piston therein cooperating with the respective cylinders' end walls to define two separate chambers therein; said method comprising the steps of:

positioning one of the transfer cylinders on a weighing machine **16**, and

adding liquid fire suppressant into one of its two chambers until a predetermined weight of suppressant is in said one chamber;

connecting a first filler hose **34** between said one chamber and the filler plug **38** on said fire extinguisher bottle **52**;

applyig a force to the floating piston and opening the filler plug to pump substantially all of the liquid suppressant through the hose into said bottle;

pressurizing said liquid suppressant by connecting a second filler hose **44** between the filler plug on the bottle and an independent source of pressurized gas; and

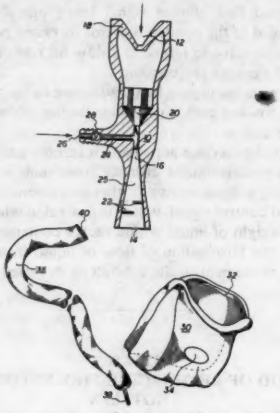
opening the filler plug to admit a predetermined quantity of said pressurized gas to the bottle.

4,337,804

HOUSEHOLD SYSTEM FOR VACUUM PACKING FOODS

Ralph M. Maruscak, Apt. 416, 250 Cedar Ridge Apts., Monroeville, Pa. 15146

Filed Jan. 16, 1981, Ser. No. 225,693
Int. Cl.[3] B65B *31/08;* B65D *33/16*
U.S. Cl. 141—65 5 Claims



1. A system for evacuating food storage containers, said system comprising:

a suction tube having an input port that is connectable to a water faucet and a suction arm that provides a low pressure condition in response to a fluid flow into said input port;

a container for holding food;

a flexible tube having a needle valve at one end thereof, said flexible tube connectable at the one end to said container by penetration thereof with the needle valve and connectable at the other end to the suction arm of the suction tube; and

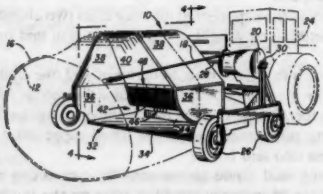
wherein said container is provided with a resealable opening through which the food is placed into and taken out of the container, and said container includes a self-sealing bladder portion adapted for insertion of the needle valve end of the flexible tube.

4,337,805

AGRICULTURAL BAG LOADING APPARATUS

William C. Johnson, Omaha; David H. Rasmussen, Arlington, both of Nebr., and Richard H. Lee, Astoria, Oreg., assignors to AG-Bag Corporation, Arlington, Nebr.

Continuation of Ser. No. 32,766, Apr. 24, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,606
Int. Cl.[3] B65B *1/24*
U.S. Cl. 141—71 35 Claims



1. An agricultural bag loading apparatus for loading material into agricultural bags, said apparatus comprising:

a housing defining an intake chamber for receiving silage and an output chamber adapted to receive the mouth of an agricultural bag;

means securing the mouth of an agricultural bag to said output chamber;

a passageway formed between said intake chamber and said output chamber;

a primary shaft;

means for rotatably supporting said primary shaft in said passageway;

drive means for selectively rotating said primary shaft;

a plurality of teeth mounted along said primary shaft in a random pattern with said teeth being evenly distributed on the surface of said shaft, said teeth being adapted to force silage from the intake chamber through said passageway and into said output chamber when the shaft is rotated;

a comb mounted on said housing and extending to within a predetermined distance from said shaft for removing silage from said teeth when the shaft is rotated;

said teeth being operable when rotated to force silage from the intake chamber, through said passageway, through said output chamber and into the agricultural bag; and

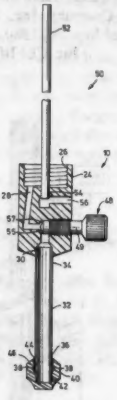
means for yieldably engaging the filled end of the agricultural bag to resist the movement of the loading apparatus away from the filled end of the bag as silage is forced into the agricultural bag so that silage is loaded into the bag at a predetermined pressure.

4,337,806

LIQUID DISPENSING DEVICE

Dominc Cirella, 139 Wentworth North, Hamilton, Ontario, Canada (L8L 5V6)

Filed Aug. 26, 1980, Ser. No. 181,739
Int. Cl.[3] B65B *3/04;* B67C *3/00*
U.S. Cl. 141—286 4 Claims



1. A device for floating liquid from a container onto a base layer formed of another liquid, comprising:

a connector attachable to the container to pass liquid from the container;

a tubular member having an upper end attached to the connector to receive the liquid passing from the container and a lower end having at least one aperture from which the liquid can escape; and,

a cap attached to the tubular member lower end, the cap having internal surfaces defining a well disposed about and rising above the apertures so that escaping liquid is constrained to rise vertically out of the well, the cap having external surfaces which are immersible in the base layer to permit the liquid rising out of the well to flow over the external surfaces onto the base layer, wherein one

of the connector and tubular member including means for regulating the flow of the liquid from the container.

4,337,807

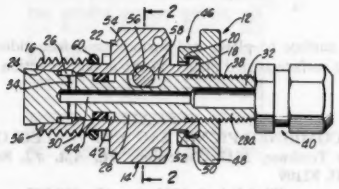
HIGH PRESSURE COUPLING

Meyer Piet, 15430 Proctor Ave., City of Industry, Calif. 91747

Continuation of Ser. No. 62,341, Jul. 31, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,761

Int. Cl.[3] B65B *3/04*; F16K *3/12*

U.S. Cl. 141—383 3 Claims



1. A high pressure valve for operably interconnecting a source of high pressure gas with the inlet of a high pressure system said valve being of the type used in high pressure gas applications involving pressures of between 5000 and 25,000 pounds per square inch and comprising:

(a) a valve body having a longitudinal bore extending therethrough, said bore terminating proximate a first end of said body in an elongated, tapered valve seat, said valve body including:

(1) first connector means for removably connecting said valve body with the high pressure system;

(2) a gas flow passageway disposed proximate said tapered valve seat; and

(3) a radially outwardly extending locking shoulder;

(b) a valve stem carried within said bore of said valve body for reciprocal movement with respect thereto, said valve stem being provided with a gas flow passageway having a inlet and an outlet, said outlet being adapted to communicate with said gas flow passageway of said valve body, said valve stem further including:

(1) an elongated valve face disposed at a first end thereof having side walls tapering at the same angle as said valve seat and adapted to cooperate therewith when seated thereagainst to provide a long frustoconically shaped sealing surface;

(2) second connector means for removably interconnecting said inlet valve stem with the source of high pressure gas; and

(3) external threads provided proximate the second end thereof for threadably receiving said second connector means; and

(c) valve actuating means for urging longitudinal movement of said valve stem within said longitudinal bore of said valve body to move said elongated valve face into sealing engagement with said elongated valve seat said means comprising an internally threaded ring rotatably carried by said valve body in threadable engagement with said threaded valve stem, said ring being provided with an inturned flange means adapted to pressurally engage said locking shoulder of said body as said ring is rotated relative to said valve body and further including means for preventing relative rotation between said valve body and said valve stem whereby as said ring is rotated relative to said body, said valve stem will be moved within said longitudinal bore to bring said valve face into sealable engagement with said valve seat.

4,337,808

SUPER-SURFACER

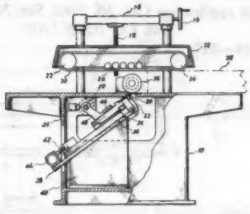
Itsuo Morisaki, Amagasaki, Japan, assignor to Morisaki Jutakusangyo Kabushiki Kaisha, Hyogo, Japan

Filed Jun. 30, 1980, Ser. No. 164,095

Claims priority, application Japan, Aug. 31, 1979, 54-111844; Mar. 24, 1980, 55-37780

Int. Cl.[3] B27C *1/14*

U.S. Cl. 144—114 A 6 Claims



1. A super-surfacer provided with a table, a blade slot formed laterally in the surface of said table, an inclined shaving blade extending through said blade slot for shaving timber fed longitudinally along the surface of said table passed said shaving blade, at least a portion of said slot and protruding blade edge defining a blade shaving position, the length of the knife edge of said shaving blade being longer than the width of said blade slot, means for reciprocally moving said shaving blade relative to said slot and means for sharpening said shaving blade, said sharpening means being positioned adjoining at least one end of said slot and displaced from the blade shaving position whereby said shaving blade upon being reciprocated is sharpened by said sharpening means.

4,337,809

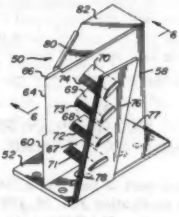
LOG SPLITTER

Robert K. Bertolette, 52 Ivy Cir., Norristown, Pa. 19403, and John E. Bertolette, 259 Graterford Rd., Schwenksville, Pa. 19473

Filed Aug. 25, 1980, Ser. No. 180,982

Int. Cl.[3] B27L *7/00*

U.S. Cl. 144—193 A 16 Claims



1. In a log splitter having means for feeding a log along a path of travel in which the log is split into a plurality of pieces, the improvement comprising:

a splitting mechanism which includes a main splitter arranged with a cutting edge facing the forward end of a log fed along said path of travel, said cutting edge of said main splitter being formed by a straight-sided wedge construction having a straight side and a beveled surface joined at said cutting edge, and a plurality of cutting knives on one side of said main splitter extending generally transversely to said main splitter with cutting edges facing the forward end of a log fed along said path of travel, said cutting knives being spaced apart relative to one another in the

direction transverse to the path of travel of the log to define at least three shearing compartments through which a log is fed as it is being split into pieces.

4,337,810

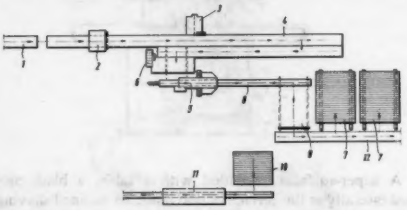
METHOD OF PRODUCING CUT TIMBER FROM ROUND TIMBER

Otto Kreibaum, Ortsteil Thüste, 3216 Salzhemmendorf 7, Fed. Rep. of Germany

Continuation of Ser. No. 964,671, Nov. 29, 1978, abandoned. This application Oct. 30, 1980, Ser. No. 202,114

Int. Cl.³ B27B 1/00

U.S. Cl. 144—357 2 Claims



1. A method of producing cut timber from round logs in a manner to increase the cut timber yield by increasing the average useable diameter of the logs, comprising the steps of precutting all of the round logs to the same predetermined substantially constant length with the said length being within the range of between two to three meters, measuring the minimum useable diameter of each precut log, providing longitudinal guide surfaces on the periphery of the precut logs for establishing a guide surface relationship for each log in accordance with narrow useable diameter ranges of their minimum useable diameters, sorting the logs in accordance with their said measured minimum useable diameter and dividing them into a plurality of groups of logs having useable diameters within said narrow useable diameter ranges respectively and the same guide surface relationship, separately storing the groups of logs, presetting a timber cutting saw for each group of logs in accordance with its useable diameter range and guide surface relationship to provide a predetermined optimum timber yield for the respective guide surface relationship, and cutting the logs of each group of logs in succession with the timber saw into timber sections with the saw preset for that group of logs while guiding each log for cutting with its longitudinal guide surfaces to provide said optimum timber yield.

4,337,811

ROTARY PLANER

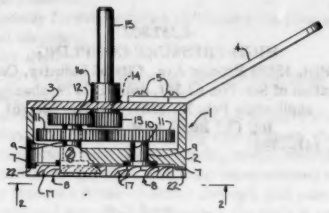
Everett J. Partington, 620 S. Elizabeth, Oconomowoc, Wis. 53066

Continuation-in-part of Ser. No. 5,556, Jan. 22, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,172

Int. Cl.³ B27C 1/10

U.S. Cl. 145—4.2 7 Claims

1. A rotary planer to be moved across a work surface to plane the surface, comprising a body having a generally flat outer face and having a pair of communicating openings in said face, the forward portion of said face, with respect to the direction of travel of said planer, being offset inwardly from the plane of said face to provide an inwardly offset forward portion, a rotary cutter journalled within each of said openings, and a drive mechanism interconnecting the cutters with a rotating power source, said drive mechanism including means for rotating the cutters in opposite directions, each rotary cutter including a plurality of teeth disposed circumferentially of the respective cutter, the outer extremities of said teeth being substantially flush with said face and the outer extremities of said teeth projecting outwardly beyond said offset forward portion, movement of said planer in said direction of travel effecting engagement of the projecting teeth with the



work surface to plane said surface, said face riding on the planed surface as said planer moves in said direction of travel.

4,337,812

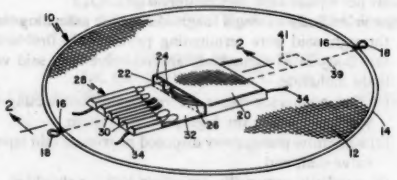
COMBINED PICNIC BAG AND TABLECLOTH

Eileen Trinkner, 1819 Chalcedony St., Apt. #2, San Diego, Calif. 92109

Filed Feb. 2, 1981, Ser. No. 230,527

Int. Cl.³ A45C 9/00

U.S. Cl. 150—11 6 Claims



1. A combined picnic bag and tablecloth comprising:

a pliable cover having an interior and exterior surface for providing a table-like setting,

a circular hem formed adjacent the perimeter of the cover and containing two oppositely placed openings,

a draw cord contained within the hem graspable through the hem openings for drawing the cover perimeter together to form a bag,

a pocket with storage compartments therein spaced substantially in the center of the interior surface of the cover,

a flap hinged to and foldable over the pocket,

a flap having compartments for storage on its inner and outer surfaces,

means for securing the flap in position over the pocket,

at least one utility pouch formed in the cover accessible from the exterior surface thereof.

4,337,813

TREAD CONFIGURATION OF PNEUMATIC TIRES FOR MOTOR VEHICLES

Heinz-Dieter Rach, Garbsen, and Henner Pieper, Langenhagen, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 177,857

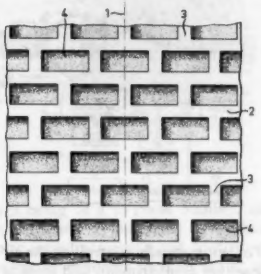
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933485

Int. Cl.³ B60C 11/10

U.S. Cl. 152—209 R 5 Claims

1. A tread configuration with an axial direction and a circumferential direction for pneumatic vehicle tires especially spare tires to be used temporarily, consisting of in combination: transverse webs having a width, circumferential webs with a

circumferential dimension, and a large number of substantially rectangular depressions having a long side located along the axial direction of the tire, said depressions being successively arranged in both the axial and circumferential directions of the tire, said depressions being respectively separated from one another by successive transverse webs and circumferential webs, the width of said webs corresponding to approximately



¼ to ¾ of the circumferential dimension of said depressions, said circumferential webs in pairs being offset relative to each other without any circumferential rows thereof being provided though sequentially following each other in offset relationship so that the tread configuration causes a loud noise to be generated as a constant reminder for necessity of changing the tire which is not intended for continuous operation, especially not for high speeds.

4,337,814

AIR VALVE CONDUIT IN THE TRACK WALL OF A TIRE

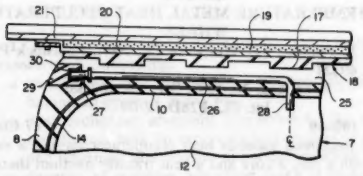
Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01272, § 371 Date Sep. 22, 1980, § 102(e) Date Sep. 22, 1980, PCT Pub. No. WO82/00978, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 22, 1980, Ser. No. 261,114

Int. Cl.³ B60C *29/00*

U.S. Cl. 152—429 **5 Claims**



1. In a tire (7) having an interior air chamber (12) bounded in part by a side wall (8) and a track wall (10), the improvement comprising:

an elongated air conduit (26, 33, 37) having first and second ends, said first end communicates with said air chamber (12) through said track wall (10) and said second end being disposed in said side wall (8); and

an air valve receptacle (27) in said side wall (8) and at said second end of said air conduit (26, 33, 37).

4,337,815

DEVICE FOR ATTACHING A CLOTH

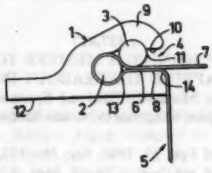
Rune Lindström, Kage, Sweden, assignor to Skega AB, Ersmark, Sweden

Continuation of Ser. No. 850,834, Nov. 11, 1977, abandoned. This application Aug. 6, 1980, Ser. No. 175,844

Claims priority, application Sweden, Nov. 15, 1976, 7612730

Int. Cl.³ A47H *13/00*

U.S. Cl. 160—392 **6 Claims**



1. A device for releasably holding flexible sheet material, comprising a holding member having a longitudinal slot with an entrance opening to said slot extending along the length of said slot, a first elongate locking member inserted through said entrance opening into said slot, and a second elongate locking member inserted through said entrance opening, after said first locking member, into said slot, said second locking member having a thickness greater than the entrance opening and being inserted through said opening by force, the device being such that the flexible sheet material extends around said first locking member and has two layers of material unsecured to each other and extending past the second locking member and out through said entrance opening adjacent a first wall of the slot, and said second locking member, when in its effective locking position in said slot, is in contact with said first locking member through one of said layers and situated between said two layers of the flexible material on one side and a second wall of the slot on the other side of said second locking member, which second wall is defined by a surface of a slightly resilient overhang integrally formed with the holding member, whereby tension applied to the layer nearest said first wall tends to lock the sheet more firmly in the slot and tension applied to the other of said layers tends to release the material from the slot.

4,337,816

PROCESS FOR PRODUCING SPHERICAL GRAPHITE CASTINGS

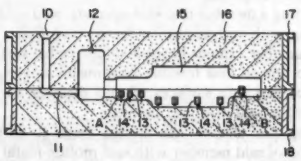
Yasuo Kaku, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 82,521, Oct. 9, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 256,988

Claims priority, application Japan, Oct. 9, 1978, 53-123526

Int. Cl.³ B22D *27/00*

U.S. Cl. 164—58.1 **3 Claims**



1. A process for molding cast iron comprising arranging within the mold's hollow part a plurality of sphering alloy blocks, the sphering alloy being selected from one of the groups consisting of Fe-Si-Mg, Si-Ca-Mg, Si-Ce-Mg-Re, or Fe-Mg, and then pouring an iron melt into the casting mold, so that spherical graphite cast iron is formed in situ around the

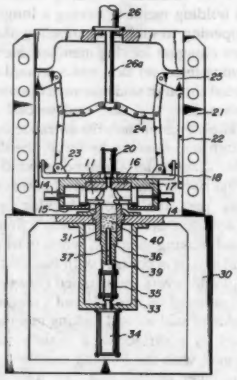
sphering alloy blocks, with the provisos that (a) each sphering block is attached to one end of a supporting rod made of a soft steel whose melting point is higher than that of the sphering alloy, the other end of which is attached to the inner wall of the mold's hollow part, so that the sphering block is not in direct contact with the mold wall, and (b) the concentration of sphering blocks is greater at the inlet end of the mold's hollow part and lesser at the far end of the hollow part.

4,337,817

METHOD OF JOINING A MEMBER TO A DIECAST ARTICLE WRAPPING THEREABOUT IN DIECASTING

Mikiya Komatsu; Masashi Arita, and Syunsuke Suzuki, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 29, 1980, Ser. No. 125,857
Claims priority, application Japan, Mar. 3, 1979, 54-24070
Int. Cl.³ B22D *17/08, 17/20, 19/04*
U.S. Cl. 164—120 **2 Claims**



1. A method of joining a member to a diecast article, using an apparatus comprising a die defining a die cavity therein, an injection sleeve associated with said die and communicating with said die cavity, a forcible feed means slidably arranged in said injection sleeve for forcibly filling said die cavity with a molten metal, means associated with said forcible feed means for driving said forcible feed means, said forcible feed means including a tip portion defining an aperture adapted to receive a member, means associated with said forcible feed means for displacing a portion of a member beyond an outermost surface of said tip portion defining said aperture to expose sides of a member to a cavity defined by walls of said injection sleeve, said method comprising the steps of:

(a) inserting a member into said aperture, said member cooperating with said displacing means such that a portion of said member extends beyond an outermost surface of said tip portion of said forcible feed means to expose an end surface and side surfaces of said member to the cavity defined in said injection sleeve;

(b) filling said sleeve with molten metal to surround said portion of said member with said molten metal to preheat said portion to a degree such that a metallurgical bond will be obtained upon casting said metal about said portion;

(c) injecting said metal into said die cavity by translation of said forcible feed means along said injection sleeve while maintaining said portion of said member exposed to said molten metal; and

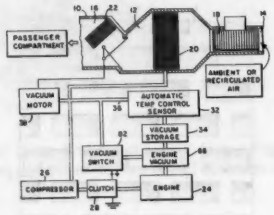
(e) solidifying said metal about said member.

4,337,818

VEHICLE TEMPERATURE CONTROL SYSTEM

Rudolph J. Franz, Schaumburg, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 18, 1979, Ser. No. 50,022
Int. Cl.³ F25B *13/00*
U.S. Cl. 165—2 **4 Claims**



4. A method of automatically controlling the air temperature in a vehicle passenger compartment, said method comprising:

(a) providing a housing having a fluid passageway communicating with said compartment,

(b) flowing ambient air through said fluid passageway;

(c) providing a heater core in said fluid passageway for transferring heat to flowing air;

(d) providing energizable refrigerating means for cooling air flowing through said passageway;

(e) selecting a set point temperature at which the air in said compartment is to be maintained;

(f) sensing the air temperature within said compartment and the ambient air temperature exteriorly of said vehicle, said sensing step including generating a control signal having a magnitude responsive to the ambient air temperature, the air temperature in said compartment, and said set point temperature;

(g) cycling said refrigerating means in a preselected cycle pattern in response to said control signal as the passenger compartment temperature rises above said set point temperature;

(h) modulating said on/off cycling means as the in-car temperature falls below said set point temperature;

(i) de-energizing said clutch in response to a control signal indicative of ambient temperatures below a predetermined value, whereupon said refrigeration means is maintained de-energized; and

(j) directing a modulated air flow over said heater core in response to said control signal at temperatures below said predetermined value for heating said compartment.

4,337,819

HIGH TEMPERATURE METAL HEAT RECUPERATION WHEEL

William A. Phillips, 617 Westshire Ct., NW., Comstock Park, Mich. 49321

Filed Aug. 25, 1980, Ser. No. 180,685
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—9 **17 Claims**

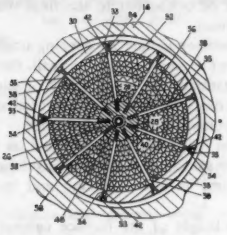
1. An improved gaseous heat recuperator having a metal wheel with a rim, a core and a heat transfer medium therebetween; means for supplying a heated gaseous stream to one side of the wheel and means for supplying a cooler gas to another side of the heat exchange wheel; means for rotating the wheel about a central axis thereof to transfer the heat from the heated gaseous stream to the cooler gaseous stream, wherein the improvement comprises:

a plurality of structural steel spokes which extend radially between said core and said rim of said metal wheel, each of said spokes having one end retained in one of the core and the rim;

the other end of each spoke being radially slidable in the

other of the core and the rim to allow for thermal expansion of the spokes; and

means for maintaining the position of the rim with respect to the core;



the spokes being of a size and number, and at a position within the wheel to materially strengthen the wheel and minimize actual expansion and contraction of the spokes as a result of exposure to both hotter and cooler gases during rotation of the wheels.

4,337,820

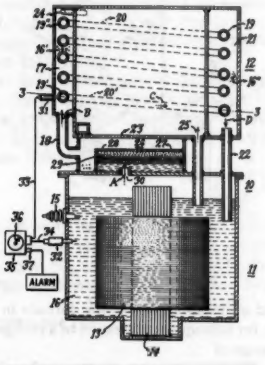
LEAK DETECTOR FOR VAPORIZATION COOLED TRANSFORMERS

Linden W. Pierce, Rome, Ga., assignor to General Electric Company, N.Y.

Division of Ser. No. 21,543, Mar. 19, 1979, Pat. No. 4,232,551. This application Feb. 22, 1980, Ser. No. 123,621

Int. Cl.³ F28D *15/00*; **G08B** *21/00*

U.S. Cl. 165—11 R **1 Claim**



1. An excess moisture detector for vaporization cooled transformers comprising:

a transformer tank containing a condensable coolant and having an opening in the top;

a heat exchanger assembly connected to the top of said transformer tank for receiving said coolant in vapor form and returning said coolant in condensed form to the tank;

a quantity of moisture adsorbing material in an apertured container located intermediate the heat exchanger and the tank for removing moisture from the coolant, said moisture adsorbing material being moisture saturated due to excessive moisture within said transformer;

temperature sensing means within a portion of the heat exchanger to determine the temperature within said heat exchanger;

temperature sensing means within the tank to determine the temperature of the coolant within the tank; and

indicating means for determining the differences in the heat exchanger temperature and the coolant temperature and for providing an indication when a predetermined temperature differential is exceeded thereby detecting that said moisture adsorbing material has become inoperative due to the presence of excess moisture.

4,337,821

AIR CONDITIONER SYSTEM FOR AUTOMOBILES

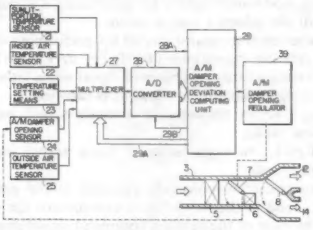
Atsunori Saito, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 21, 1979, Ser. No. 96,554

Claims priority, application Japan, Nov. 28, 1978, 53/147576; Sep. 12, 1979, 54/117507

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—12 **4 Claims**



1. In an air conditioner system for vehicles including air duct means communicated with a vehicle compartment, cooler means disposed in said air duct means for supplying cooled air, heater means disposed in said air duct means for supplying heated air, damper means adjustably disposed in said air duct means for controlling the ratio between said cooled air and said heated air which are supplied to said vehicle compartment through said air duct means, and control means for adjusting the position of said damper means such that the temperature in said vehicle compartment approaches a desired compartment temperature value, the improvement comprising:

first temperature responsive means disposed in said vehicle compartment to be directly responsive to the radiant heat of the sun and effective to produce a first output signal indicative of the temperature present thereat;

second temperature responsive means disposed, in said vehicle compartment to be irresponsive to the radiant heat of the sun and effective to produce a second output signal indicative of the temperature present thereat;

means responsive to said first output signal and said second output signal and effective to provide a solar radiation value in proportion to the difference between said output signals;

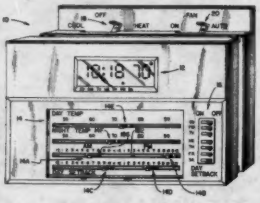
means responsive to said second output signal and said solar radiation value and effective to produce an estimated compartment temperature value by correcting said second output signal by at least said solar radiation value only when said first output signal exceeds said second output signal; and

means responsive to said desired compartment temperature value and said estimated compartment temperature value and effective to actuate said control means in response to the deviation of said estimated compartment temperature value from said desired compartment temperature value.

4,337,822
DIGITAL THERMOSTAT

Tom M. Hyltin, 5733 Preston Haven, Dallas, Tex. 75230, and J. Scott Jamieson, 715 Waverly Dr., Arlington, Tex. 76015

Division of Ser. No. 67,028, Aug. 16, 1979, Pat. No. 4,264,034.
This application Nov. 13, 1980, Ser. No. 206,672
Int. Cl.[3] F25B *29/00*
U.S. Cl. 165—26 1 Claim



1. In an automatic thermostat of the type having a programmable switch circuit for cycling heat transfer apparatus on and off, the improvement comprising:

a system mode interrogator for generating a signal representative of the selected system mode;

a temperature comparator circuit for performing the comparative relation operations (T_A-T_{SET}) or (T_{SET}-T_A) and for generating a turn-on command signal when either one of the following comparative relations is satisfied:

T_A-$T_{SET} \geqq K_1$ in response to a mode signal indicating the cooling mode,

T_{SET}-$T_A \geqq K_2$ in response to a mode signal indicating the heating mode;

a timing circuit responsively coupled to the programmable switch and to the temperature comparator for enabling the transmission of the turn-on command signal after the elapse of a predetermined minimum-off interval following the generation of the turn-on command signal; and,

a temperature differential control unit coupled to the temperature comparator to carry out the following operations in response to the presence of the turn-on command signal and to the enabling condition of the minimum-off timer:

T_A-$T_{SET} \geqq \Delta T_1$, in response to a mode signal indicating the heating mode, and

T_{SET}-$T_A \geqq \Delta T_2$, in response to a mode signal indicating the cooling mode,

the turn-on command signal being terminated when either of the latter comparative relations are satisfied,

wherein K_1, K_2, ΔT_1, and ΔT_2 are arbitrary temperature bias values, and T_A=ambient temperature, T_{SET}=set point temperature.

4,337,823
ELECTRIC FURNACE FOR MOBILE AND MODULAR HOMES

Michael J. DelPercio, St. Louis County, Mo., assignor to Intertherm Inc., St. Louis, Mo.

Filed Oct. 5, 1979, Ser. No. 82,005
Int. Cl.[3] F25B *29/00;* F28F *7/00*
U.S. Cl. 165—48 R 3 Claims

1. A down-flow type furnace of doorless closet installation in mobile or modular homes and the like, comprising

an enclosed upright rectangular heater-blower cabinet having

a lower air outlet duct opening in the cabinet bottom wall,

an electric heating element,

a blower,

an air inlet opening in the cabinet top wall,

forward cabinet door means to provide access to said heating element and blower, and

an air inlet assembly including

a rectangular frame member substantially vertically mounted, along its lower edge only, onto the forward edge of the top wall of the heater-blower cabinet,

the other edges of said frame member being free,

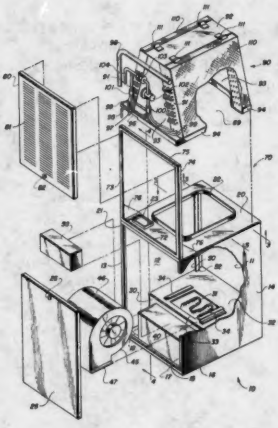
whereby said other edges of said frame member may on installation be connected to the final wall trim of such doorless closet,

said frame member having an opening commencing above and adjacent to said cabinet top wall, the opening width being substantially the entire width of said cabinet, and

an air conducting panel removably secured across said frame member opening; in combination with

a refrigeration coil assembly positioned on the cabinet top wall over its said air inlet opening at substantially the level of said frame member opening and mountable therethrough,

whereby the height of the furnace cabinet and height of installation are minimized while removal of said air conducting panel affords optimum access for servicing said refrigeration coil assembly, whether of a heat pump or an air conditioner.



3. The method of installing an electric furnace in a mobile home or the like, for subsequent utilization of a refrigerant coil, comprising the steps of

installing in a doorless closet space upon a floor duct plenum, a down-flow heater-blower cabinet having a top wall air inlet, and

constructing a forward closet wall immediately above the edge of the top wall of the heater-blower cabinet and finishing same to the top and side edges of a frame commencing about the level of such top wall and extending upward,

the frame having an air conducting panel; and thereafter

removing such air conducting panel and positioning through such frame, on the top wall of the heater-blower cabinet about its air inlet, an uncased refrigerant coil and operatively connecting same to an outdoor coil and to the electric furnace,

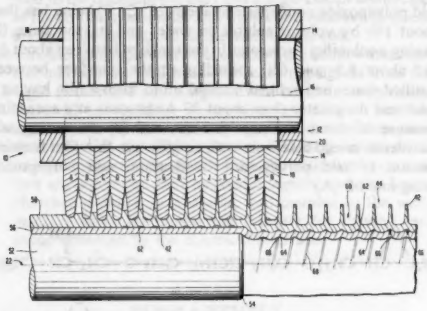
whereby, on adding the uncased refrigerant coil, return air may flow through the air conducting panel to and through the coil and thence through the heating elements of the electric furnace.

4,337,824

DOUBLE WALL HEAT EXCHANGER

Kenneth L. Kirk, Cranston, R.I., assignor to Amtrol, West Warwick, R.I.

Filed Oct. 24, 1980, Ser. No. 200,598
Int. Cl.³ F28F 1/36
U.S. Cl. 165—70 16 Claims



1. Double wall tubing which comprises:

(i) an outer tube having an outer helical fin and a continuous, small helical groove on the inside of the outer tube, the helical groove following the helical path of the outer helical fin;

(ii) an inner tube having a slightly-raised continuous helical protrusion which mates with the inner helical groove of the outer tube; and

(iii) a continuous, narrow helical passageway between the inner tube and outer tube formed by the mating continuous, small helical groove and the slightly-raised continuous helical protrusion, said continuous, narrow helical passageway being unimpeded and extending from one end of said double wall

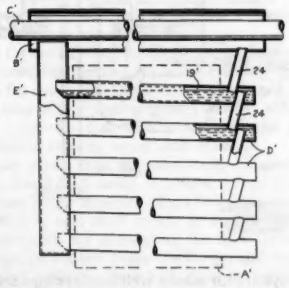
tubing to the other end thereof, the inner surface of the outer tube, except in the region of the inner, continuous, small helical groove thereof, contacting the outer surface of the inner tube, except in the region of the slightly-raised continuous helical protrusion.

4,337,825

HEAT PIPE MANIFOLD HEAT EXCHANGER

James M. Stewart, 115 Sylvan Way, Greenville, S.C. 29605

Division of Ser. No. 859,977, Dec. 12, 1977, Pat. No. 4,285,394.
This application Feb. 6, 1981, Ser. No. 231,983
Int. Cl.³ F28D 15/00
U.S. Cl. 165—104.21 8 Claims



1. Heat pipe manifold heat exchange apparatus for exchanging heat between first and second heat exchange media comprising:

frame means having closed sides and open opposed faces through which a flow of said first medium is delivered;

a plurality of heat tubes carried by said frame means exposed to said first medium flow having a vaporizable heat transfer medium therein;

collector means connected to said heat tubes adjacent one end thereof receiving vaporized heat transfer medium therefrom;

manifold means communicating with said collector means, said manifold means including means for conveying a flow of said second heat transfer medium therethrough; and

overflow means connected between adjacent ends of said heat tubes remote from said collector means for returning said condensed heat transfer medium to said heat tubes and maintaining a desired level of said heat transfer medium therein;

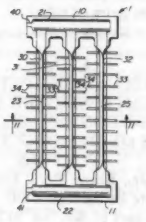
whereby vaporized heat transfer medium from the heat tubes condenses in said manifold transferring its latent heat to said second medium therein.

4,337,826

HEAT EXCHANGERS AND METHOD OF MAKING SAME

Richard W. Kritzer, Chicago, Ill., assignor to Peerless of America, Inc., Chicago, Ill.

Filed Feb. 26, 1979, Ser. No. 15,124
Int. Cl.³ F28D 1/04; B21D 53/02
U.S. Cl. 165—151 9 Claims



1. A heat exchanger comprising

a. two sheet members bonded together in face-to-face relation to each other

b. said sheet members defining a plurality of elongated tubular members disposed therebetween in substantially planar spaced relation to each other; and

c. said sheet members including a plurality of fins

(1) integral thereto,

(2) spaced from each other along said tubular members,

(3) having elongated base portions extending transversely across said sheets and said tubular members, and

(4) projecting transversely and oppositely outwardly away from said sheets and said tubular members.

4,337,827

HELICAL STEAM GENERATOR TUBE SUPPORT

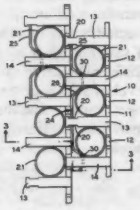
Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 1, 1980, Ser. No. 192,775
Int. Cl.³ F28F 9/00; F22B 37/20
U.S. Cl. 165—172 1 Claim

1. A support structure for a heat exchanger having helically coiled tubes being arranged generally parallel and being arranged in a plurality of concentric tube rows, comprising:

a plurality of longitudinally extending generally flat support plates having support members affixed to the longitudinal edges thereof and extending perpendicular from the plane thereof, the members on one edge of a strip being in a shifted position relative to the members on the other edge thereof to accommodate the helical geometry of the tubes, the plates being arranged generally parallel to the helical axis and each plate extending between a pair of adjacent

said tube rows, the support members being longitudinally spaced to accept and nest the helically coiled tubes there between, the plates being notched to mate with the support members of an adjacent plate, a plurality of spring plates each for urging a pair of corresponding tubes against a support plate, alternating successive support members having recesses to accept the edges of said



spring plates, said spring plates being sized to engage said recesses of said alternating support members and having notches to accommodate remaining members and having generally flat portions separated by a corrugation, the flat portions bearing against a support strip, the corrugation running generally parallel with the tubes and bearing against adjacent pairs of tubes.

4,337,828

METHOD OF RECOVERING PETROLEUM FROM A SUBTERRANEAN RESERVOIR INCORPORATING POLYEPOXIDE CONDENSATES OF RESINOUS POLYALKYLENE OXIDE ADDUCTS AND POLYETHER POLYOLS

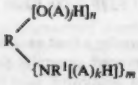
Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Sante Fe Springs, Calif.

Continuation-in-part of Ser. No. 917,053, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 917,057, Jun. 19, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,470

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—274 **15 Claims**

1. The method of recovering petroleum from a subterranean reservoir comprising the steps of: (1) introducing into said reservoir a predeterminable amount of a polyepoxide condensate of at least one of: (a) a polyalkylene oxide adduct of a fusible, water-insoluble organic aromatic hydrocarbon solvent-soluble synthetic resin, wherein said resin has from between about 4 to about 15 phenolic groups and is an alkyl or cycloaliphatic substituted phenol-aldehyde condensate of an ortho- or parasubstituted phenol and an aldehyde, said condensate resin being thereafter further condensed with an alkylene oxide containing less than about five carbon atoms in an amount equal to at least one mole of alkylene oxide per phenolic moiety of said resin, the weight ratio of oxide to condensation product in a solvent-free state being between about 1-to-10 and about 10-to-1; and (b) a polyether polyol having the formula:



wherein:

A is an alkylene oxide group, $-C_iH_{2i}O-$;

O is oxygen;

i is a positive integer from 2 to about 10;

j is a positive integer no greater than about 100;

k is a positive integer no greater than about 100;

N is nitrogen;

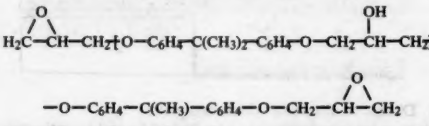
R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;

L is a positive integer no greater than about 100;

R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and

m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen,

said polyepoxide condensate at about 25° C.: (i) being less than about 1% by volume soluble in water and in isooctane; (ii) having a solubility parameter in the range of between about 6.9 and about 8.5; and (iii) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a spreading pressure of about 16 dynes per cm; and (2) contacting said petroleum in said reservoir with an effective thin film forming amount of said polyepoxide condensate, said polyepoxide being one of: (A)



where n is zero or a positive integer of less than about 6; and (B) a polyepoxide containing two or more oxirane or epoxy groups selected from the class consisting of, epoxidized linseed oil and epoxidized polybutadiene.

4,337,829

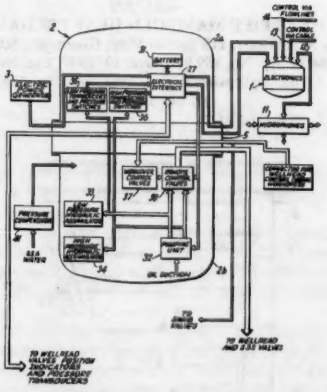
CONTROL SYSTEM FOR SUBSEA WELL-HEADS

Valeriano Banzoli, Mestre; Leonardo Beccegato, Venice; Paolo Minardi; Emilio Morganti, both of Mestre, and Marco P. Selleroni, Venezia-Lido, all of Italy, assignors to Tecnomare, S.p.A., Venice, Italy

Continuation-in-part of Ser. No. 27,452, Apr. 5, 1979, abandoned, which is a continuation of Ser. No. 892,198, Mar. 31, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,328

Int. Cl.³ E21B *34/04*

U.S. Cl. 166—366 **9 Claims**



1. A control system for subsea well-heads comprising:

an above-water control system including a control panel arrangement for initiating predetermined commands to the well-heads, a logic circuit connected thereto to provide an output control signal designated by the control

panel, a first receiver and a first transmitter activated by the output signal,

a plurality of different transmission links coupled to the transmitter and receiver, at least one of which is utilized by the first transmitter and receiver,

an underwater control unit including a second receiver to receive the output control signals and a second transmitter to provide feedback signals to the first receiver both coupled to the transmission links and a logic circuit connected to the second transmitter and the second receiver to direct the appropriate signals to the well-heads, and,

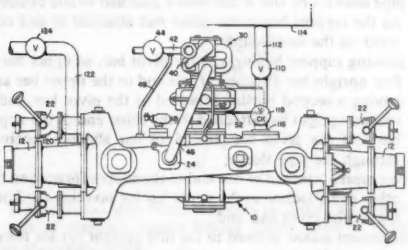
an electric-hydraulic unit connected to the underwater control unit and the well-heads for receiving signals from the logic circuit and actuating the well-heads in accordance therewith comprising a container partitioned into an upper and lower chamber having an interconnection plate therebetween, the upper chamber including an electrical interface wherein the signals from the underwater control unit are converted into hydraulic signals, and the lower chamber including a hydraulic unit coupled to the well-heads, a hydraulic pump and a motor for driving said pump activated by the electrical interface.

4,337,830

PUMP ASSEMBLY

H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.

Division of Ser. No. 902,350, May 3, 1978, Pat. No. 4,209,282.
This application Feb. 11, 1980, Ser. No. 120,139
Int. Cl.³ A62C *27/00*
U.S. Cl. 169—24 **11 Claims**



1. A pump assembly for use in fire fighting service and adapted to be mounted on a mobile unit such as a fire truck comprising:

a main pump having an impeller means, a suction to the impeller means, and a discharge from the impeller means,

means for connecting the discharge of said main pump to a first high flow rate fire fighting application,

a booster pump having an impeller means, an inlet to the booster pump impeller means, and a discharge from the booster pump impeller means,

means for connecting the discharge of said booster pump to a second fire fighting application,

means for connecting the discharge from said main pump to the inlet of said booster pump, and

drive means for said main pump and said booster pump including rotating pump shaft means,

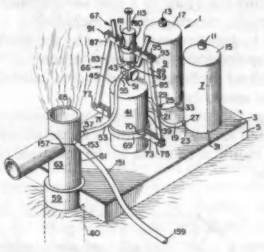
said main pump impeller means being mounted on one portion of said shaft means so as to be driven thereby, and said booster pump impeller means being mounted on another portion of said shaft means so as to be driven thereby, valve means for controlling the flow through said main pump and booster pump discharges and operable to flow control positions in which flow is permitted through either of said discharges only or through both of said discharges concurrently, said booster pump discharge being connected to a low flow high pressure second fire fighting application such as a hose reel and said first fire fighting application comprises a fire hose, valve means controlling the flow from said booster pump discharge to said second fire fighting service and a by-pass conduit providing flow from a part of said booster pump inlet upstream of said valve means back to the inlet of said main pump.

4,337,831

FIRE EXTINGUISHING APPARATUS FOR OIL WELLS

Darrel G. Thaxton, P.O. Box 201, Athens, La. 71003

Filed Mar. 7, 1980, Ser. No. 128,065
Int. Cl.³ A62C *35/12*
U.S. Cl. 169—69 **9 Claims**



9. A fire extinguishing apparatus for oil wells comprising:

a platform having a depending skirt therearound;

a plurality of containers secured to the platform;

a main container secured to the platform;

valve conduits connecting each of said plurality of containers to said main container;

valve means in said main container having a valve actuating plunger reciprocal within said valve and having an end extending from the valve during inactive conditions;

valved conduit means connecting said valve means of said main container to the interior of a bell nipple attached to a blowout preventor of an oil well;

bracket means on said main container;

valve plunger actuating means positioned above and unconnected to said plunger of said valve means by said bracket means; and

means for actuating said valve plunger actuating means whereby said plunger is depressed thus actuating said valve means whereby the contents of said plurality of containers and said main container flow through said valved conduit means into the interior of said bell nipple to extinguish a fire therein.

4,337,832

LIFT SYSTEM, STEERING SYSTEM, AND PIVOTAL BLADE FOR LAND PLANE

Jerry Whitlow, Rte. 7, Box 393A, Paragould, Ark. 72450

Filed Jun. 27, 1980, Ser. No. 163,565
Int. Cl.³ A01B *61/04, 69/08;* E02F *3/76*
U.S. Cl. 172—265 **16 Claims**

1. An improved land plane comprising:

(a) a front section, a center section and a rear section, wherein the front and rear sections are pivotally connected to the center section for swinging movement about axes transverse to the longitudinal axis of the plane for raising and lowering the center section between a raised position and a lowered position;

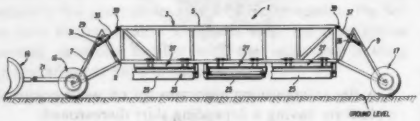
(b) contact means carried by the center section for engagement by the front and rear sections in the lowered position but spaced from both the front and rear sections in the raised position; and

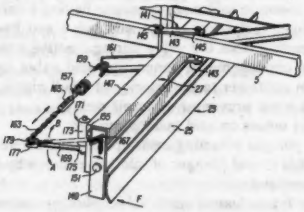
(c) a hydraulic lift system including:

i. a first hydraulic fluid motor for imparting swinging movement to the front section;

ii. a second hydraulic fluid motor for imparting swinging movement to the rear section;
iii. a first hydraulic fluid line for providing fluid communication between the first and second motors;
iv. a second hydraulic fluid line for supplying pressurized hydraulic fluid to the motors; and
v. means for equalizing the displacement of hydraulic fluid between the motors and permitting both the front and rear sections to engage the contact means.

7. An improved land plane for connection to a tow vehicle and a pressurized hydraulic fluid source, which land plane comprises:
(a) a front wheel assembly and a rear wheel assembly;
(b) a pivotal tongue carried by the front wheel assembly for connecting the plane to a tow vehicle; and
(c) a hydraulic steering system including:
i. a first hydraulic motor carried by the front wheel assembly for actuation by the pivotal tongue;
ii. a second hydraulic fluid motor carried by the rear wheel assembly;
iii. means for providing fluid communication between the first and second fluid motors for actuation of the second fluid motor in response to the actuation of the first fluid motor;





iv. means for permitting independent actuation of the second fluid motor by the pressurized hydraulic fluid source; and
v. means in fluid communication with the means for providing fluid communication between the first and second fluid motors for bypassing fluid flow to the second fluid motor to purge entrapped air from the steering system and directing the purged air back to the pressurized hydraulic fluid source to permit compensation for variations in steering between the front and rear wheel assemblies.

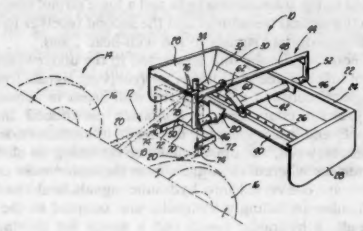
10. A pivotal grader blade having a biasing mechanism for imparting a restoring force in opposition to applied forces encountered during grading for controlled tripping of the blade and prevention of damage thereto, which biasing mechanism comprises:
(a) resilient means for imparting the restoring force; and
(b) means for transmitting the restoring force from the resilient means to the pivotal grader blade so as to require a greater degree of applied force for initiating tripping of the blade than that which is required for subsequent continued tripping of the blade, which transmitting means includes:
i. a linkage; and
ii. an elongate member having a free end for camming against the linkage at a desired point along the length thereof.

4,337,833

TILTABLE BOX SCRAPER FOR THREE-POINT ATTACHMENT TO A TRACTOR

Rafael J. Welch, P.O. Box 175, St. John, Kans. 67576

Filed Dec. 8, 1980, Ser. No. 213,995
Int. Cl.³ E02F 3/76
U.S. Cl. 172—445.1 **3 Claims**



2. An improved tiltable box scraper for attaching to a standard three-point hitch at the rear of a farm tractor or the like, the scraper comprising:
a scraper housing having a moldboard with a cutting blade attached at an angle to the bottom of the moldboard and a pair of vertical end plates, the opposite ends of the moldboard attached to the rear of the end plates;
a lateral support brace, parallel to the moldboard, the opposite ends of the support brace attached to the front of the end plates;
a pipe sleeve, one end of the sleeve attached to and centered on the support brace, the other end attached to and centered on the moldboard;
a housing support having a lower pivot bar, an upper bar, a first upright bar attached at one end to the upper bar and having a second portion attached to the pivot bar, and a second upright bar attached to the other end of the upper bar and the pivot bar, the pivot bar slidably received through the pipe sleeve;
pivot means attached at one end to the support brace and the other end attached to the upper bar for pivoting the housing on the pivot bar; and
attachment means secured to the first upright bar for releasably attaching the scraper to the three-point hitch.

4,337,834

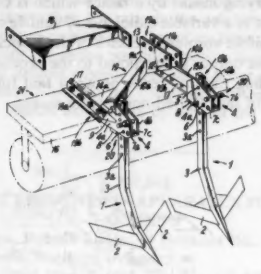
IMPLEMENT TO BE MOUNTED ON A TRACTOR FOR THE LOOSENING OF SOIL

Ernst Welchel, Postfach 1180, 7326 Heiningen, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,183
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915628
Int. Cl.³ A01B 59/06
U.S. Cl. 172—448 **6 Claims**

1. An implement for loosening soil arranged to be propelled by a tractor as the tractor travels on the surface of the soil, comprising at least one supporting structure extending transversely of the direction of travel thereof, whenever it is propelled by the tractor, at least two loosening bits releasably connected to said supporting structure, means attached to said supporting structure for mounting additional implements whose tools are to be driven by the power take-off of the tractor through at least one universal joint shaft, said supporting structure having the shape of an inverted V arranged with the apex thereof extending upwardly from the loosening bits so as to form a passage for enabling the universal joint shaft driving the tools of an additional implement to extend therethrough, said supporting structure carrying at its apex upper coupling means and the two lower ends of said supporting structure carrying lower coupling means, said loosening bits

arranged upwardly adjustably in said lower coupling means, said upper and lower coupling means being adapted for engagement with link members linking said supporting structure with the tractor.

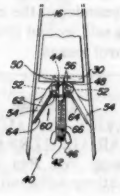


4,337,835

SCRAPER FOR DOUBLE DISK FURROW OPENER

Ronald M. Steilen, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 23, 1981, Ser. No. 228,033
Int. Cl.[3] A01B *23/06*
U.S. Cl. 172—560 14 Claims



1. In a double disk blade assembly including a support, and a pair of rotatable blades having inside surfaces, a scraper assembly comprising:

a hinge rigidly secured to the support between the disk blades;

a pair of scrapers rockably supported by the hinge and movable against the inside surfaces of the disk blades; and

a leaf spring supported adjacent the hinge and including biasing portions urging the respective scrapers into engagement with the inside surfaces of the corresponding disk blades.

4,337,836

BULLDOZER LINKAGE

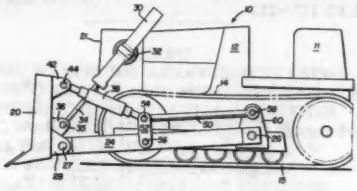
David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company

Filed Sep. 26, 1980, Ser. No. 191,476
Int. Cl.[3] E02F *3/76*
U.S. Cl. 172—826 1 Claim

1. In an earth-working vehicle having a frame and a transverse blade at the forward end thereof, a pair of spaced apart pushbeams each pivotally secured at one end on opposed sides of said vehicle to track frames and said beams pivotally secured to said blade at their opposed ends, the improvement comprising:

a leveling link assembly for each pushbeam, each leveling link assembly including a mounting plate connected to one of said track frames, one of said pushbeams being pivotally mounted to said mounting plate, a leveling link pivotally mounted at one end to said mounting plate, said leveling link being vertically spaced above said pushbeam and generally parallel thereto, the other end of said leveling link being pivotally connected to support links which are pivotally connected to said pushbeam, said leveling link, support links, mounting plate, and pushbeam forming a parallelogram;

an adjustable strut pivotally connected at one end to the support links of one of said leveling link assemblies and at its other end to an upper corner of said blade; and



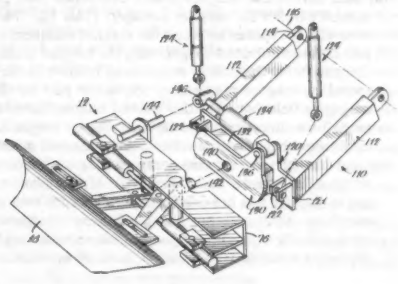
a tilt cylinder pivotally connected between the support links of the other leveling link assembly and another upper corner of said blade whereby said adjustable strut and tilt cylinder force said blade into a relatively vertical attitude upon said blade being raised to thereby reduce blade roll-back and actuation of said tilt cylinder causing tilting of said blade while said blade is being kept at said relatively vertical attitude.

4,337,837

MOUNTING MECHANISM FOR ANGLE DOZER BLADE

Roland N. Nissen, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Division of Ser. No. 950,593, Oct. 12, 1978, Pat. No. 4,244,429.
This application Jun. 19, 1980, Ser. No. 161,127
Int. Cl.[3] E02F *3/76*
U.S. Cl. 172—822 9 Claims



1. A mounting mechanism for supporting a dozer blade on a vehicle comprising: a mounting flame; arm means comprising a pair of laterally spaced arms, between said mounting frame and said dozer blade, for pivotally mounting said blade on said mounting frame; moving means comprising a pair of separate laterally spaced motor means, carried by said mounting frame, each motor means being operatively connected to the laterally opposite one of said arms for moving said arm means to shift said dozer blade relative to said mounting frame about at least one generally vertical axis; linkage means for pivotally linking said mounting frame and said vehicle; first fluid ram means, joining said vehicle and said linkage means, for pivoting said linkage means on said vehicle to raise and lower said mounting frame and said dozer blade as a unit; and second fluid ram means, joining said linkage means and said mounting frame, for pivoting said mounting frame with respect to the longitudinal axis of said vehicle.

4,337,838
WEIGHING APPARATUS INCLUDING IMPROVED PERMANENT MAGNET SYSTEM

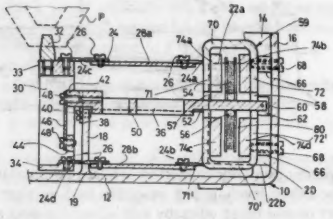
Peter Kunz, Gossau, Switzerland, assignor to Mettler Instrumente AG, Greifense, Switzerland

Filed Apr. 20, 1981, Ser. No. 255,670

Claims priority, application Switzerland, Jul. 30, 1980, 5806/80

Int. Cl.³ G01G *7/00*

U.S. Cl. 177—212 **8 Claims**



1. In a weighing apparatus of the electromagnetic load compensation return-to-zero type including a frame (**10**), load-receiving means (**30**) connected for vertical movement from a normal no-load position relative to the frame, permanent magnet means (**59**) connected with the frame for establishing a permanent magnetic field, compensation coil means (**54**) connected with said load-receiving means for movement in said magnetic field, means responsive to displacement of said load-receiving member, upon the application of a load thereto, from its initial no-load position for supplying compensating current to said coil means to produce a restoring force for returning said load-receiving means to its initial no-load position, and indicator means for indicating the magnitude of the load as a function of the compensating current required to return the load-receiving means to its initial no-load position;

the improvement wherein

(a) said permanent magnet means comprises two pairs of spaced parallel flat magnet members (**74***a*, **74***b*; **74***c*, **74***d*), whereby the spaces between the magnet members of each pair define a common air gap (**80**), the magnet members of one pair being oppositely magnetized relative to the corresponding magnet member of the other pair so that the magnetic field between one pair of magnet members extends in a direction opposite that of the magnetic field established between the other pair of magnet members;

(b) and further wherein said compensation coil means comprises a flat annular coil (**54**) contained in a plane extending in said air gap between and parallel with said magnet members, said coil normally being symmetrically arranged relative to said magnet members when said load-receiving member is in its initial no-load position.

4,337,839
MEANS FOR IMPROVING AUTOMOBILE DRIVEABILITY

Lael B. Taplin, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 14,660, Feb. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 863,634, Dec. 22, 1977, abandoned. This application Jun. 30, 1980, Ser. No. 164,669

Int. Cl.³ B60K *31/00*; F02D *11/10*

U.S. Cl. 180—179 **14 Claims**

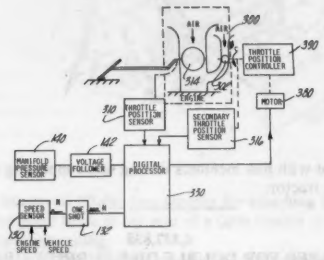
1. In a vehicle powered by an internal combustion engine having a moveable throttle for determining the vehicle speed and a control linkage for setting the position of said throttle in response to operator commands, and a second throttle means for improving the driveability of the automobile, comprising:

means providing a first signal indicative of the position of said throttle set by said control linkage;

first multiplying means for multiplying said first signal by a factor which is determined by parameters of the vehicle and providing an output proportional to the product thereof;

second multiplying means for multiplying the output of said first multiplying means by a factor which is constituted by the quotient of a variable indicative of vehicle speed divided by the manifold absolute pressure of the vehicle engine and providing an output proportional to the product thereof;

means providing the difference between said first signal and the output of said second multiplying means;



differentiating means providing an output proportional to the derivative with respect to time of said output of said difference means;

control means responsive to the output of said differentiating means for modifying the last named output in accordance with the desired dynamics of the engine and vehicle; and

means for positioning said second throttle in proportion to the output of said control means.

4,337,840
DRIVING DEVICE FOR AUTOMOBILES, IN PARTICULAR ALL-TERRAIN VEHICLES

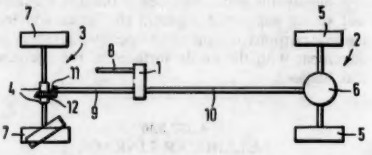
Ernst Bufler, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,816

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928351

Int. Cl.³ B60K *17/34*

U.S. Cl. 180—233 **4 Claims**



1. In a driving device for automobiles, for example all-terrain vehicles, wherein the driving engine can simultaneously drive several vehicle axles by way of a transfer case having an input shaft connected to said driving engine and two output shafts, a constant drive is applied to at least one vehicle axle via one of said output shafts and a differential gear, and a drive for at least one additional vehicle axle is directly provided from the other output shaft via at least one freewheel device that is automatically locking and without a differential gear, the improvement characterized in that:

the two output shafts of said transfer case are constantly engaged with said input shaft;

said at least one freewheel device comprises separate, automatically lockable freewheel devices associated with each individual wheel on the axle driven thereby, which indi-

vidual freewheel devices are effective during both forward and reverse travel; and

the transmission ratio in the axle drive of the vehicle axle driven by way of the freewheel devices is designed sufficiently larger than the ratio in the axle drive of the constantly driven vehicle axle that at no time during cornering, within the entire possible steering lock range of the steerable vehicle wheels, does there occur a strain due to the relative drives to the constantly driven vehicle axle and the vehicle axle driven by way of the freewheel devices.

4,337,841

ACCIDENT PREVENTION APPARATUS FOR POWER TAKEOFFS

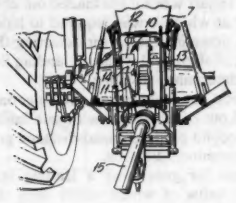
Gerald S. Law, Rubena Lodge, 48 Dromara Rd., Hillsborough, County Down, Northern Ireland

Filed Mar. 7, 1980, Ser. No. 128,372

Claims priority, application United Kingdom, Mar. 7, 1979, 7907966; May 22, 1979, 7917750; Jan. 3, 1980, 8000221

Int. Cl.³ B60R *21/00*

U.S. Cl. 180—271 **6 Claims**



1. An apparatus having at least one moving part driven through a gear box by an internal combustion engine, accident prevention apparatus comprising in electrical circuit, cut-off means to cut off transmission of power from the internal combustion engine driving the moving part so as to stop the moving part, elongated contact-sensitive means extending in the vicinity of the moving part having a portion positioned adjacent a movement-sensitive means, the cut-off means being activated when the elongated contact-sensitive means is deflected so as to cause it to touch the movement-sensitive means, the transmission cut-off means comprising at least one solenoid which on being energized in response to contact of the movement-sensitive means and the elongated contact-sensitive means mechanically moves a gear lever of the gear box to a neutral position immediately causing power from the engine to cease to be transmitted to the moving part.

4,337,842

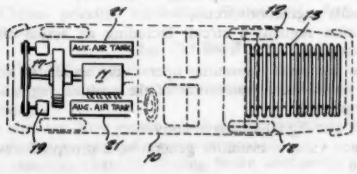
VEHICLE POWERED BY AIR PRESSURE ENGINE

Ray P. Spangler, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg.,, both of New York, N.Y. 10007

Filed Feb. 20, 1980, Ser. No. 123,196

Int. Cl.³ B60K *3/00*

U.S. Cl. 180—302 **2 Claims**



1. A vehicle, comprising in combination, a compression operated engine on said vehicle driving a flywheel and the vehicular wheels, a pipe between said engine and a compression power source, said power source comprising a supply tank containing compressed air, and means whereby a high compression is maintained in said tank while said air is removed therefrom to said engine, wherein said means comprises said compressed air tank being expandable wherein a valve along said pipe is controlled by a knob on a dashboard of said vehicle for air volumerate control to said engine wherein a brake lining is provided around said flywheel in combination with a brake system of said vehicle.

4,337,843

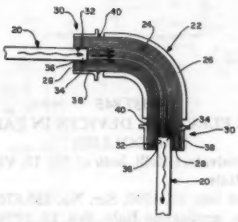
SONIC WAVEGUIDE ARRANGEMENT USING DIFFERENT WAVEGUIDES AND TECHNIQUE FOR COUPLING THE WAVEGUIDES TOGETHER

Richard C. Wendel, Hermitage, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 22, 1980, Ser. No. 171,244

Int. Cl.³ G10K *11/00*; G01K *1/02*; G01N *29/00*

U.S. Cl. 181—175 **7 Claims**



1. A sonic waveguide arrangement for use in transmitting sonic energy from one point to another along a non-linear path, said arrangement comprising a first sonic waveguide consisting essentially of a single rod of material extending from one end thereof to its other end along a linear section of said path, a second different sonic waveguide including a plurality of fibers each smaller in cross-section than said rod and means for maintaining said fibers in a flexible bundle larger in cross-section than said rod, said second waveguide extending from one end thereof to its other end along a short, curved section of said path adjacent to said linear path section, and means for coupling adjacent ends of said first and second waveguides together for passing sonic energy therebetween, said first waveguide being of a type which transmits sonic energy over said linear path section with less transmission losses than would said second waveguide if the latter were used to transmit sonic energy over the same linear path section and said second waveguide being of a type which transmits sonic energy over said curved path section with less transmission losses than would said first waveguide if the latter were used to transmit sonic energy over the same curved path section.

4,337,844

TREE SUPPORT FOR HUNTERS

Robert C. Hice, Sr., Rte. 8, Cumming, Ga. 30130

Filed Apr. 28, 1980, Ser. No. 144,201

Int. Cl.³ A01M *31/02*; A45F *3/26*; A47C *9/10*

U.S. Cl. 182—187 **7 Claims**

1. An apparatus for engaging trees and the like for supporting a person above the ground, comprising:

a first openable frame section surrounding the trunk of a tree and including a first pair of parallel tubular arms joined by an upper tree-engaging member and a lower tree-engaging member, said first frame section gripping said tree upon the exertion of downward pressure on said lower tree-engaging member;

a second frame section telescopically mounted to said first frame section by a second pair of parallel arms slidably receivable within said first pair of arms and joined by a

support member, for selective extension of said support member in a direction away from said tree; and

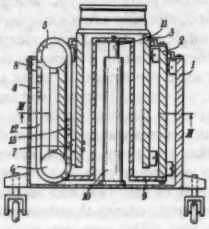
a flexible seat suspended between said first frame section and said support member of said second frame section.

4,337,845

TELESCOPIC ELEVATOR DEVICES IN PARTICULAR FOR DOLLIES

Sante Zelli, and Salvatore Zelli, both of No. 15, Via Poggibonsi, 00148 Rome, Italy

Filed Sep. 10, 1980, Ser. No. 185,676
Claims priority, application Italy, Sep. 18, 1979, 50287 A/79
Int. Cl.[3] B66B *11/04*
U.S. Cl. 187—17 3 Claims



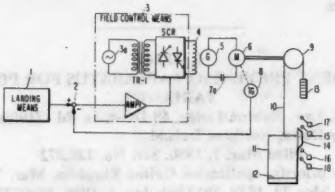
1. A telescopic elevator device in particular for dollies for cinema or television, characterized in that it comprises, in combination, a wheel mounted base member, a first extension member telescopically slidable on said base, a second extension member telescopically mounted at the interior of the first extension member, and means for controlling simultaneous sliding of said extension members with respect to the base with a differential speed such that the sliding speed of the second extension member is the double of the sliding speed of the first extension member, said means for the sliding with differential speed comprising a chain transmission, passing over two sprockets fastened to the first extension member and having their rotation centers aligned on a straight line parallel to the axis of sliding of said extension members, the two rectilinear portions of said chain transmission being respectively connected with the upper end of the base member and with the lower end of said second extension member, the simultaneous sliding of the two telescopic extension members being controlled by a hydraulic ram operating on a tubular member concentric and coaxial with said extension members and said tubular members having at the base a flange rigidly connected with a base of said first extension member, said base and extension members being of triangular cross-sectional configuration.

4,337,846

ELEVATOR RELEVELLING CONTROL APPARATUS

Masashi Yonemoto, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,808
Claims priority, application Japan, Apr. 24, 1979, 54/50494
Int. Cl.[3] B66B *1/44*
U.S. Cl. 187—29 R 15 Claims



1. An elevator relevelling control apparatus for causing an elevator car to restart when it has landed out of alignment with a landing floor at which it was required to land, comprising;

first position detecting means for detecting that said car has landed out of alignment with said landing floor position by a first predetermined distance,

second position detecting means for detecting that said car has landed out of alignment with said landing floor position by a second predetermined distance greater than said first predetermined distance,

landing means for generating a landing speed command signal, the value of which varies with the distance by which said car is out of alignment with said landing floor position,

load detecting means for detecting whether the load in said car has exceeded a predetermined value, and

means responsive to said landing speed command signal for relevelling said car when positional misalignment of said car has been detected by said first position detecting means when said load detecting means has detected that the load in said car does not exceed a predetermined value, and for relevelling said car when a positional misalignment of said car has been detected by said second position detecting means when said load detecting means has detected that said load in said car exceeds a predetermined value.

4,337,847

DRIVE CONTROL FOR AN ELEVATOR

Joris Schröder, Lucerne, and Martin Meier, Gisikon, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Sep. 4, 1980, Ser. No. 184,121
Claims priority, application Switzerland, Sep. 27, 1979, 8687/79
Int. Cl.[3] B66B *1/30*
U.S. Cl. 187—29 R 11 Claims

1. A drive control for a transportation system, especially an elevator having an elevator cabin, comprising:

a regulation circuit;

said regulation circuit comprising:

a velocity regulation circuit;

a position regulation circuit including an actual-value transmitter;

at least one pulse transmitter operatively associated with the actual-value transmitter of the position regulation circuit; and

at least one digital-analogue converter;

a reference value transmitter generating a group of travel curves;

a control storage provided for said reference value transmitter;

said control storage containing at least permissible jerk

values and threshold values of the acceleration of the elevator cabin;

three summation stages with which there is connected the control storage;

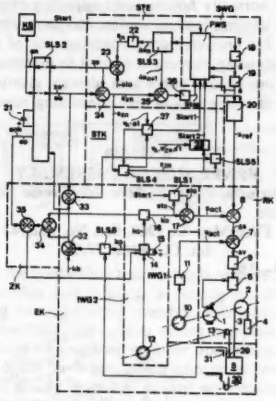
said summation stages generating by progressive numerical integration, respectively, the acceleration, the velocity and the displacement path of the elevator cabin;

said three summation stages including a last summation stage delivering an output magnitude to said regulation circuit as a displacement path-reference value;

a storey site storage;

a stop initiation device serving for the determination of a braking application point of the elevator cabin;

said stop initiation device coacting with said control storage and said storey site storage and generating a stop initiation signal;



a stop correction device with which there is connected said stop initiation device;

said stop correction device producing by interpolation of neighboring elevator travel curves an optimum travel curve and controlling the control storage of the reference-value transmitter;

an arrival correction device connected with the actual-value transmitter of the position regulation circuit and the storey site storage;

said arrival correction device influencing said reference-value transmitter;

a counter correction device acting upon said actual-value transmitter and said storey site storage; and

a current regulation circuit operatively connected with said velocity regulation circuit.

4,337,848

START CONTROL DEVICE, ESPECIALLY FOR AN ELEVATOR

Gerhard Kindler, Meggen, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Apr. 10, 1981, Ser. No. 252,877

Claims priority, application Switzerland, Apr. 21, 1980, 3056/80

Int. Cl.³ B66B *1/32*

U.S. Cl. 187—29 R **7 Claims**

1. A start control apparatus, especially for an elevator, comprising:

an elevator drive motor which can be turned-on by means of closing contacts of a mains protection;

an electromechanical holding brake containing at least one brake magnet and one brake spring;

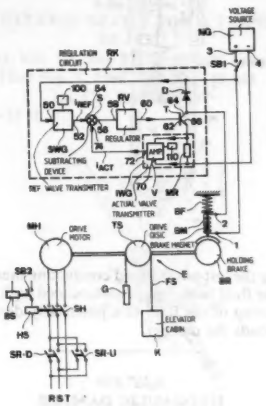
means defining a voltage source having a first terminal and a second terminal;

said brake magnet having a first terminal and a second terminal;

a brake protection having a closing contact for connecting said first terminal of said brake magnet with said first terminal of said voltage source and for energizing the brake magnet upon turning-on the elevator drive motor and for lifting-off the holding brake against the force of the brake spring;

a regulation device with which there is operatively connected said brake magnet;

said regulation device having a reference value transmitter;



said reference value transmitter having an input;

said input of said reference value transmitter being connected by means of the closing contact of the brake protection with said first terminal of said voltage source;

a switching transistor having a collector and serving as an adjustment element of said regulation device; and

said second terminal of said brake magnet being connected with said collector of said switching transistor, by means of which there can be connected said brake magnet with said second terminal of said voltage source.

4,337,849

ENERGY MANAGEMENT DAMPER

Richard W. Siorek, and James P. Theuerkauf, both of Macomb, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

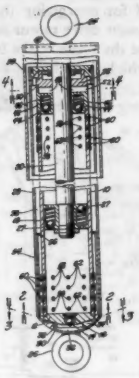
Filed Jul. 24, 1980, Ser. No. 171,872

Int. Cl.³ F16F *9/52*

U.S. Cl. 188—276 **3 Claims**

1. An expansible chamber energy management damper comprising a first cylinder having a head end and a rod end, a piston and piston rod reciprocable in the cylinder, a second cylinder having a head end and a rod end and surrounding the first and having its inside cylinder walls spaced from the outside cylinder walls of the first cylinder, the annular space between the two cylinder walls constituting a fluid reservoir, the two cylinders spaced apart axially at their head ends to provide a head chamber between them, fluid flow passages connecting said head chamber and said annular reservoir, at least two fluid flow passages in the piston for fluid flow through the piston, a check valve in one of said at least two passages to permit fluid to flow from the rod side of the piston, a check valve in the remaining one of said at least two fluid flow passages to permit fluid to flow toward the rod side of the piston, packing means in the rod end of the first cylinder to provide a fluid seal between the first cylinder and the rod which allows normal reciprocation of the piston and piston rod without fluid leakage past the rod to atmosphere, check valve means for permitting fluid flow from the rod side of the piston to the fluid reservoir, check valve means for permitting fluid

flow from the head chamber into the first cylinder, means to conduct fluid between the space inside the first cylinder and the reservoir, and temperature responsive valve means normally closing the last-named fluid conducting means and openable when the fluid heats to a predetermined high temperature, whereby heating of the fluid to a potentially destructive temperature unloads the damper.



4,337,850

HYDRAULIC DAMPER

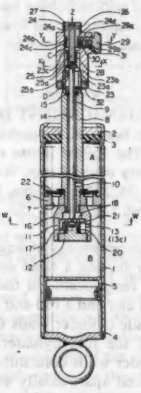
Akihiro Shimokura, Higashimine, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 8,339, Jan. 31, 1979, abandoned. This application Sep. 25, 1980, Ser. No. 190,847

Claims priority, application Japan, Feb. 6, 1978, 53/13498[U]

Int. Cl.³ F16F *9/34*

U.S. Cl. 188—319 **3 Claims**



1. A hydraulic damper comprising a cylinder containing oil therein, a hollow piston rod one end of which projects out of the cylinder and the other end of which extends into the cylinder, a piston provided on the inner end of the piston rod and dividing the interior of the cylinder into two oil chambers, a connecting passage including the interior of the hollow piston rod and placing the two oil chambers in communication, a rod member rotatably extending through the hollow piston rod and projecting out of the cylinder, a valve mechanism on the inner end of the rod member for changing the effective area of the connecting passage and consisting of a first member secured to said rod and a second member secured to said piston, said first member being slidable on said second member during rotation of said rod member, one of said first and second members having a plurality of orifices spaced therearound and the other of said first and second members successively covering said orifices during rotation of said rod member in one direction and successively uncovering said orifices during rotation in the other direction, an adjusting element receiving member detachably connected to the other end of the piston rod, and adjusting element mounted on the adjusting element receiving member and being rotatable and axially displaceable relative thereto, the inner end of the adjusting element being adapted to non-rotatably engage with the outer end of the rod member, said adjusting member having a plurality of axially extending grooves in the outer circumferential surface thereof corresponding in number and position to said orifices, and a spring biased lock element mounted on the adjusting element receiving member and resiliently engaging in respective ones of said grooves for normally holding said adjusting element against rotation due to vibration and the like and permitting incremental rotation for uncovering or covering one of said orifices when said adjusting element is rotated to move said lock element out of one groove into a next adjacent groove for adjustment of the effective area of said connecting passage.

4,337,851

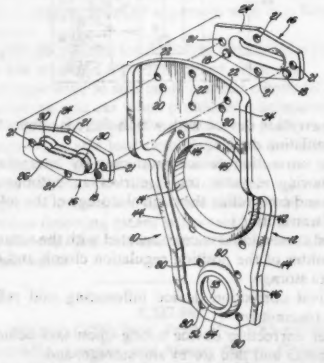
BRAKE SUPPORT ASSEMBLY

William L. Pringle, 999 Lakeshore Rd., Grosse Pointe Shores, Mich. 48236

Filed May 23, 1980, Ser. No. 152,743

Int. Cl.³ F16D *51/22*

U.S. Cl. 188—330 **25 Claims**



1. A brake support assembly **(10)** to be mounted on a vehicle for supporting a brake shoe assembly **(28)** and an actuator therefor, said assembly **(10)** comprising; a backing plate **(12)** having an opening **(14)** extending therethrough for receiving an axle therethrough to fixedly mount said backing plate **(12)** on the axle and having a plurality of alignment bores **(20, 20')** therein and having a support flange **(34)** having opposite parallel faces and having integral side flanges **44** extending therefrom, anchoring means **(16)** removably attached to said backing plate **(12)** for pivotally supporting the brake shoe assembly **(28)** and comprising an anchoring plate **(24,24')** having projecting means **(26,92)** for pivotally engaging the brake shoe assembly **(28)** and said projecting means **(26,96)** including spaced rounded anchors **(30,94)** for pivotally engaging oppositely disposed brake shoes **(32)** of the brake shoe assembly **(28)** and one of said anchoring plates **(24,24')** being disposed on each of said parallel faces of said support flange **(34)** whereby said rounded anchors **(30,94)** are paired to coact with spaced ribs **(36,38)** of a brake shoe **(32)**, removable fastening means **(40)** removable from said anchoring means **(16)** and said backing plate **(12)** independently of said alignment means for securing

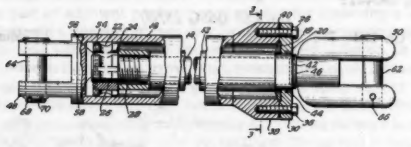
said anchoring means (16) to said backing plate (12) and for allowing said anchoring means (16) to be removed and replaced, and alignment means (18,18') structurally different from said fastening means (40) for positioning said anchoring means (16) at a predetermined position on said backing plate (12) whereby said anchoring means (16) may be removed and replaced while maintaining a constant positioning of the brake shoe assembly (28) and said alignment means (18,18') including projections (18,18') extending from said anchoring means (16) for coacting with said alignment bores (20,20') to align said anchoring means (16) at said predetermined position on said backing plate (12).

4,337,852

LOAD CONTROL LINK

John F. Flory, Morristown, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 23, 1980, Ser. No. 152,854
Int. Cl.³ F16F 7/12
U.S. Cl. 188—375 14 Claims



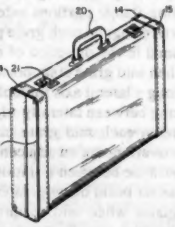
1. A device for controlling tension loads comprising: a housing, a shaft within said housing, a cutting member, cutting means bearing on said cutting member, said cutting member being cylindrical and said cutting means comprising a collar concentric about said cutting member and mounted on said housing, said collar having a cutting edge on its inside periphery and said cutting member having an outside diameter slightly larger than the inside diameter of said collar, and connection means attached at the opposite end of said housing or said shaft such that tension load applied to said connection means tends to produce relative motion between said cutting means and said cutting member resulting in energy dissipation by the action of cutting material from said cutting member.

4,337,853

COVER FOR LUGGAGE CASE AND METHOD OF MAKING

Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Sep. 30, 1980, Ser. No. 192,607
Int. Cl.³ A45C 5/02
U.S. Cl. 190—53 8 Claims



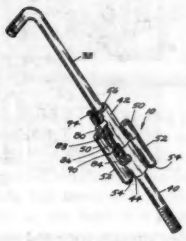
1. A cover for a luggage case of the type having cooperating dished shells hinged along an edge, said cover comprising a main piece of sheet material of generally rectangular shape for one of said shells, and a pair of end strips of sheet material for each of the opposite ends of said main piece, one strip of each pair being shorter in length than the other strip of the pair, the larger strip of each pair of end strips being extended into overlapping relation to the edge of said main piece and secured thereto, the remaining edge of said larger strip of each pair of end strips being matched with one edge of the shorter strip of said pair of end strips and stitched together along one side and around the ends of the shorter strip, said main piece and pairs of end strips in assembled relation providing a three-dimensional dished cover conforming to the exterior surface of one of said shells.

4,337,854

PRESSURE RELEASE DEVICE FOR A TRANSMISSION BRAKE

Jerry L. Oxley, Rte. #1, Box 87, Greenfield, Iowa 50849

Filed Sep. 8, 1980, Ser. No. 185,343
Int. Cl.³ B60K 41/24
U.S. Cl. 192—13 R 11 Claims



1. Apparatus for transferring and terminating the transfer of force from a first member to a second member through a fluid medium, comprising:

a fluid filled coupling having respective opposite ends and secured at one end to said first member,

said second member arranged for reciprocal movement at the other end of said coupling to act on said fluid,

said first member adapted for actuation by a source of power and said second member adapted for connection to a third member to be operated,

actuation of said first member effecting relative movement of said first and second members whereby said fluid under pressure in said coupling acts as a solid connection between said members to transmit force therebetween to said third member,

means operably associated with said coupling for the removal and storage of said fluid out of operable relationship with said first and second members, and

with said first member actuated, fluid is moved out of operable relationship with said first and second members to a point of storage over a determined time interval for operation of said third member whereby at the completion of such removal, the force transmitting fluid connection between said first and second members terminates by removal of the fluid from operable relationship therebetween to relieve pressure on said third member without deactuating said first member.

4,337,855

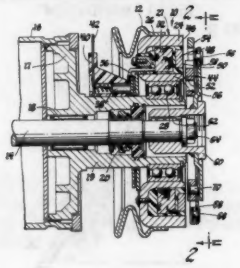
MULTIPLE ARMATURE RING AND SPRING MOUNTING ARRANGEMENT FOR ELECTROMAGNETIC FRICTION-TYPE CLUTCHES AND BRAKES

George T. Bennett, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 7, 1980, Ser. No. 147,490
Int. Cl.³ F16D 27/07
U.S. Cl. 192—84 A 3 Claims

1. In an electromagnetic clutch or brake of the type having a plurality of radially spaced armature rings which are

mounted by a spring arrangement on one of two relatively rotatable members and which on energization of a solenoid mounted on the other member are caused to separately frictionally engage respective pole faces on said other member and commonly frictionally engage an interpole ring on said other member with the establishment thereby of a magnetic flux path and then on deenergization are caused to disengage therefrom by the spring arrangement against the resistance of residual magnetism: an improved spring mounting and armature ring arrangement comprising in combination, spring means mounting said armature rings on said one member so that there is relatively small spring resistance to conjoint engagement travel of all said armature rings and a large spring resistance to engagement travel of the radially outermost armature ring



relative to the other armature ring and said radially outermost armature ring having substantially more engagement travel than said other armature ring so that on energization said other armature ring engages before said radially outermost armature ring with overcoming first of said small spring resistance followed by overcoming of said large spring resistance as said radially outermost armature ring is brought to engagement whereby on deenergization the relatively large spring force thus stored in said spring means is effective to overcome the residual magnetism and cause said radially outermost armature ring to first disengage whereupon there is effected an air gap in the magnetic flux path to dissipate such residual magnetism to permit said other armature ring to then be disengaged with just the small spring force of said spring means.

4,337,856

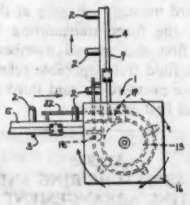
TRANSFER MECHANISM FOR A MAGNETIC CONVEYOR

Wolfgang C. Dorner, Okauchee, Wis., assignor to Dorner Mfg. Corp., Hartland, Wis.

Filed Aug. 14, 1980, Ser. No. 178,158

Int. Cl.³ B65G *47/34, 15/58*

U.S. Cl. 198—599 **5 Claims**



1. A transfer mechanism for a magnetic conveying system, comprising a first conveyor having a first endless belt disposed to convey ferro magnetic articles in a first conveying run, a second conveyor including a second endless belt to convey said articles in a second conveying run, said second conveying run disposed at an angle to said first conveying run, a magnetic pulley, said first and second belts being disposed on said pulley in side-by-side relation, and guide means disposed outwardly of the pulley and including a pair of spaced generally parallel guide rails extending completely around the periphery of said pulley and arranged in a generally helical configuration for guiding the articles laterally from said first belt to said second belt as the belts travel around said pulley.

4,337,857

STEPPED GRATE-TYPE COOLER FOR HOT PARTICLES

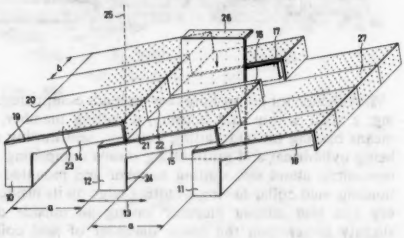
Richard Schneider, Wermelskirchen, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 24,900, Mar. 29, 1979, abandoned, which is a continuation of Ser. No. 758,807, Jan. 12, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,319

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1976, 2604611

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—773 **2 Claims**



1. A stepped grate-type cooler for particulate material comprising a plurality of spaced grate plate carriers, alternate carriers being stationary and the carriers positioned between the stationary carriers being reciprocable relative thereto between a first position in which each of said reciprocable carriers is in close proximity to an adjoining carrier and a second position in which each of said reciprocable carriers is farthest removed from said adjoining stationary carrier, each of said grate plate carriers including transversely extending carrier beams with integral carrier fingers extending therefrom in the direction of conveyance of said material, a plurality of grate plates respectively carried by said carrier fingers and a means for releaseably connecting said grate plates to respective carriers, said grate plates lying flat against said carrier fingers and having depending flange portions extending against the front ends of said carrier fingers, each grate plate having a longitudinal axis positioned in the direction of reciprocal movement of said carriers when said grate is supported thereby, the width of a grate plate along a lateral axis thereof being sufficient to span across the spacing between laterally adjacent fingers so as to be supported thereby, each said grate plate and respective supporting fingers overlapping an adjacent downstream grate and fingers, the clearance between a stationary carrier beam and a reciprocable carrier beam being greater than the width of each of said grate plates when said reciprocable carriers are in a mid-position between said first and second positions of said reciprocable carrier such that each grid plate can be removed from said carriers and rotated by 90° about its longitudinal axis and positioned vertically in said clearance such that the longitudinal axis of said grate is perpendicular to the direction of reciprocal movement of said carriers and said lateral axis is substantially parallel to said direction of reciprocal movement for downward removal through said clearance.

4,337,858

LENS CASE

Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Mar. 27, 1980, Ser. No. 134,742
Int. Cl.[3] B08B *3/04, 3/00*
U.S. Cl. 206—5.1 11 Claims

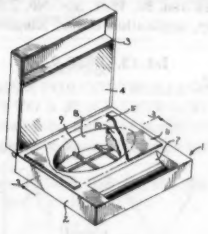
1. A lens case, comprising in combination: a base member and a cover member, said base and cover members having cooperating joining and closing means for selectively joining said base and cover members and thereby closing the lens case, means on said base member including partition means, defining a pair of adjacent pockets, each pocket for receiving a single lens and a quantity of lens disinfecting solution, aperture means in said partition means for permitting said solution to flow between the pockets to maintain substantially equal amounts of said solution therein, said partition means being spaced apart from said cover member, when the lens case is being closed, a sufficient distance for substantially preventing damage to a lens inadvertently located over the partition during said joining and said closing, while substantially preventing transmigration of a lens from one pocket to the other, in the event said lens may adhere to the cover and the cover subsequently rotated as would occur during removal of the cover member after disinfecting of the lenses.

4,337,859

METHOD OF PRODUCING A COSMETIC PRODUCT CONTAINING A POWDER CAKE

John H. Murphy, Matamoras; John J. Brodzinski, Milford, both of Pa., and Donald D. Horton, Glen Spey, N.Y., assignors to Kolmar Laboratories Inc., Port Jervis, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,447
Int. Cl.[3] A45C *11/00;* A45D *33/00;* B65B *1/04, 5/00*
U.S. Cl. 206—37 7 Claims



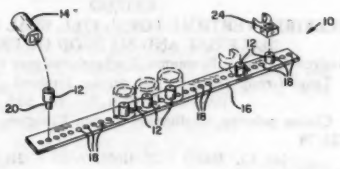
6. A cosmetic product, comprising a casing having a bottom surface and an open top, said casing defining a cavity, a cover to enclose the open top of said casing, the bottom surface of said casing having an opening communicating with said cavity, a grid structure disposed within said opening and dividing said opening into a plurality of apertures, a molded powder cake disposed within the cavity and extending within said apertures in said grid structure, said cake being composed of a mixture of a powdered cosmetic material, a fatty alcohol containing from 12 to 22 carbon atoms in the molecule, cosmetic coloring materials, and a residual amount up to 2% by weight of an evaporable liquid siloxane, the portion of the cake in the region of said grid structure having an increased concentration of said fatty alcohol to provide increased toughness for the cake in said region, and a sheet of sealing material disposed beneath the cover and enclosing the upper surface of said cake.

4,337,860

DETACHABLE WRENCH SET ORGANIZER AND STORAGE UNIT

Alfred C. Carrigan, 22324 NE. Finn Hill Rd., Brush Prairie, Wash. 98606

Filed Sep. 21, 1981, Ser. No. 304,315
Int. Cl.[3] B65D *85/20*
U.S. Cl. 206—376 4 Claims



1. Apparatus for organizing and storing individual ones of detachable members of tools having sets of said detachable members, said members having a drive hole in one end adapted to engage a drive member, and having the other end shaped to matingly engage nuts, bolt heads and the like, comprising:

(a) a base member in the form of a planar strip having a plurality of spaced holes in its upper surface with means for affixing said base member to a support surface; and

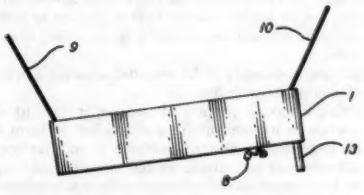
(b) a plurality of cylindrical posts, each having an upper cylindrical portion with a top face and a lower base portion with a boss attached thereto adapted to fit removably into said spaced holes in said base member, and said upper portion of said posts fitting with frictional engagement into said drive holes of said tool detachable members, whereby said detachable members may be pressed onto said posts for storage without regard to their radial orientation thereto.

4,337,861

BINGO CARD BOX

Calvin R. Smart, 160 S. Main St., Franklin, N.H. 03235

Continuation-in-part of Ser. No. 775,371, Mar. 7, 1977, abandoned. This application Aug. 17, 1977, Ser. No. 825,397
Int. Cl.[3] B65D *77/04, 79/00*
U.S. Cl. 206—579 4 Claims



1. A card box adapted to hold a multiplicity of slide-type bingo cards comprising: two trays, an inner one nestling and telescoping within an outer one, said trays each having two sidewalls and an end wall that is on the opposite end from the end wall of the other tray, said end walls being of a height insufficient to support said slide-type bingo cards in a generally upright viewing position; finger-operable locking means adapted to lock the position of one tray with respect to the other and to permit the expanding and collapsing of the space encompassed by said trays as desired by the user thereof; and

front and rear flaps pivotedly mounted between and to the sidewalls of said trays and extending upwardly in the open position to support said slide-type bingo cards in said generally upright viewing position, said flaps being supported in said open position by the respective said end wall adjacent thereto and being adapted to being folded down one over the other into said space encompassed by said trays and onto the bottom interior surface of said box when said trays are in a collapsed position, thus facilitating storage of said card box, said space encompassed by said trays when in a collapsed position being approximately the size of the face of one of said bingo cards such that a multiplicity of said bingo cards can lay flat therein on top of said flaps when said card box is collapsed for storage.

4,337,862

FLEXIBLE VERTICAL FORM, FILL, SEAL PACKAGING MATERIAL AND METHOD OF USING

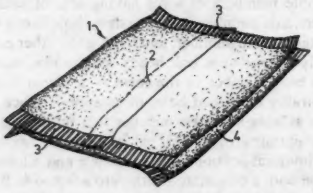
Andrew K. Suter, Brampton, England, assignor to The Wiggins Teape Group Limited, Basingstoke, England

Filed Jan. 2, 1979, Ser. No. 586

Claims priority, application United Kingdom, Jan. 9, 1978, 722/78

Int. Cl.³ B65D *3/26*; B65B *9/00*; B32B *27/00*

U.S. Cl. 206—632 **21 Claims**



1. A method of packaging a fill material comprising the steps of:

providing a continuous paper web impregnated with a release composition whereby said release composition is present on a surface of said web, the release treated surface being coated with an adhesive which is substantially non-tacky at ambient temperature and in the absence of pressure and forms a strong initial bond immediately on activation when two portions of said adhesive coated surface of said paper web are bonded together with adhesive coated surface in contact with adhesive coated surface, said release composition present on said surface of said paper web rendering said paper web releasable with respect to said adhesive whereby two portions of said adhesive coated surface of said paper web bonded together with adhesive coated surface in contact with adhesive coated surface may be peeled apart at an interface of said adhesive and said release treated surface of said paper web;

dispensing a quantity of fill material adjacent a first portion of said paper web; and,

bonding a second portion of said paper web to said first portion to include the fill material and to form a closed package having closures peelable at an interface of said adhesive and said release treated surface of said paper web by bringing an adhesive coated surface area of said second paper web portion into contact with an adhesive coated surface area of said first paper web portion and bonding said adhesive coated surface areas together by activating said adhesive at said areas.

3. A package formed by the process of claim **1** or **2**.

8. A package made in a vertical form, fill, seal process, said package comprising:

a single piece of a paper web impregnated with a release composition whereby said release composition is present on a surface of said web, the release treated surface being coated with an adhesive which is substantially non-tacky at ambient temperature and in the absence of pressure and forms a strong initial bond immediately on activation when two portions of said adhesive coated surface of said paper web are bonded together with adhesive coated surface in contact with adhesive coated surface, said release composition present on said surface of said paper web rendering said paper web releasable with respect to said adhesive whereby two portions of said adhesive coated surface of said paper web bonded together with adhesive coated surface in contact with adhesive coated surface may be peeled apart at an interface of said adhesive and said release treated surface of said paper web; and,

said single paper web piece having first and second portions bonded together with an adhesive coated surface area of said first portion of said paper web piece bonded to an adhesive coated surface area of said second portion of said paper web piece, the bond being peelable at an interface of said adhesive and said release treated surface of said paper web.

10. Flexible packaging material suitable for use in a vertical, form, fill, seal packaging process to produce packages of the pillow type, comprising:

a paper web impregnated with a release composition whereby said release composition is present on a surface of said paper web, the release treated surface being coated with an adhesive which is substantially non-tacky at ambient temperature and in the absence of pressure and forms a strong initial bond immediately on activation when two portions of said adhesive coated surface of said paper web are bonded together with adhesive coated surface in contact with adhesive coated surface, said release composition present on said surface of said paper web rendering said paper web releasable with respect to said adhesive whereby two portions of said adhesive coated surface of said paper web bonded together with adhesive coated surface in contact with adhesive coated surface may be peeled apart at an interface of said adhesive and said release treated surface of said paper web.

4,337,863

PROCESS FOR THE CONCENTRATION OF FIBROUS MATERIAL

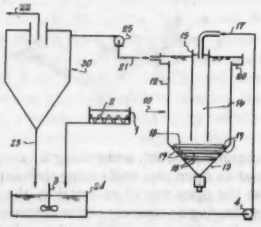
Alan W. Atkinson, and Adrian M. Steer, both of Rochdale, England, assignors to T and N Materials Research Limited, Manchester, England

Filed Jan. 30, 1981, Ser. No. 229,851

Claims priority, application United Kingdom, Jan. 31, 1980, 8003243

Int. Cl.³ B03B *9/00*

U.S. Cl. 209—12 **6 Claims**



1. In a process for the concentration of fibrous material obtained from mineral melt in a mixture thereof with non-fibrous mineral melt material, comprising subjecting an aqueous suspension of the mixture to centrifugal force in a hydrocyclone to obtain an overflow enriched in fiber and an underflow of reduced fiber content, the aqueous suspension which is admitted to the hydrocyclone being the fiber-enriched fraction which results from a preliminary classification;

said preliminary classification comprising submitting an aqueous suspension of lower fiber:non-fiber ratio to flow under conditions which bring about settling out under ordinary gravitational force of material reduced in fiber content and formation of a fiber-enriced fraction above it;

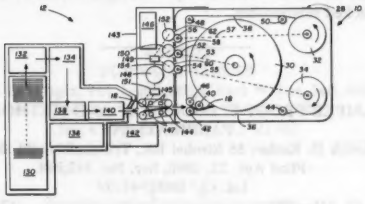
the improvement consisting of incorporating the underflow from the hydrocyclone in the aqueous suspension which is submitted to said preliminary classification.

4,337,864

CURRENCY NOTE DISPENSING SYSTEM

Charles M. McLean, Richardson, Tex., assignor to Docutel Corporation, Irving, Tex.

Filed Feb. 22, 1980, Ser. No. 123,642
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—534 **23 Claims**



1. A system for dispensing currency notes, comprising:

a cartridge for receiving a predetermined number of currency notes, comprising a housing, a supply spool mounted for rotation therein, at least one takeup spool mounted for rotation therein and at least one film secured at opposite ends to said supply spool and said takeup spool and wound about said spool, means for interlocking said housing and said supply spool to prevent unauthorized dispensing of currency notes from the cartridge, and means to detect unauthorized operations of said cartridge;

a loader for accepting a quantity of currency notes and loading the predetermined number of currency notes individually into said cartridge;

a dispenser for dispensing currency notes individually from said cartridge; and

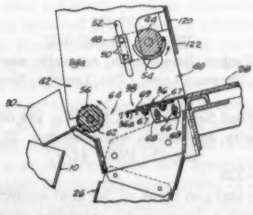
said cartridge being adapted for use selectively with both said loader and said dispenser and being transferrable from said loader to said dispenser.

4,337,865

FEEDER MECHANISM FOR CONTROLLING DELIVERY OF FRUIT TO A JUICE EXTRACTOR

Robert F. Rohm, Yorba Linda, and Olav Berge, Monterey Park, both of Calif., assignors to Brown International Corporation, Covina, Calif.

Filed Sep. 8, 1980, Ser. No. 185,331
Int. Cl.³ B07C *5/06*
U.S. Cl. 209—548 **24 Claims**



1. Feeder mechanism for controlling the delivery of fruits from a supply source to a juice extractor for processing therein, which comprises:

means providing a feed path having an inlet end adapted to receive fruits from said supply source, and an outlet end adapted for connection with a delivery path for conducting the fruits to the juice extractor;

gating means at the inlet end of said feed path operative to admit to the feed path fruits that do not exceed a predetermined size; and

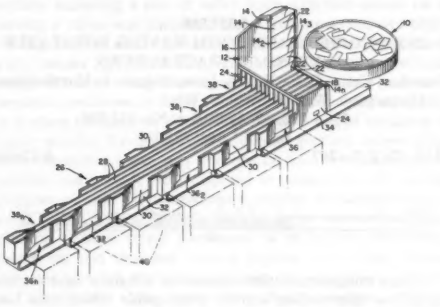
means at the outlet end of said feed path movably operable to impel fruits from the feed path to the delivery path, and upon cessation of its movement being operable to provide a fruit retaining stop abutment between the feed path and the delivery path.

4,337,866

MAIL SORTING APPARATUS AND SYSTEM

Robert C. Suling, Crozet; Charles W. Tomlinson, Orange, and Winfred G. Fields, Waynesboro, all of Va., assignors to Acme Visible Records, Inc., Crozet, Va.

Filed Jul. 28, 1980, Ser. No. 172,652
Int. Cl.³ B07C *9/00, 7/04*
U.S. Cl. 209—656 **10 Claims**



1. In combination with routing apparatus for correspondence having a housing and plurality of slots for entry of said correspondence to a selected conveyor path and movement from said housing to a discharge location along each path, a rack assembly for collection of correspondence at a discharge location of each of two adjacent conveyor paths, said rack assembly comprising a hanger assembly including a frame having a plurality of members arranged in a rectangular pattern, each said member formed by a substantially rectangular plate connected to an adjacent plate along respective sides of minor dimension, a collection device for said correspondence supported by said hanger assembly, said collection device having an opening located to receive correspondence from either or both of said adjacent conveyor paths, and means for supporting said hanger assembly below said discharge location of each said conveyor path.

4,337,867

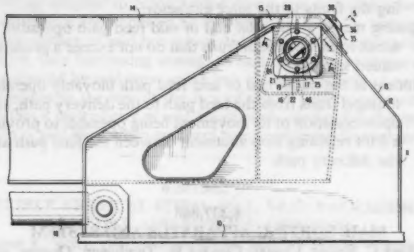
CURANE BOOM PIVOT STRUCTURE

Stanley R. Spain, Greencastle, Pa., assignor to Kidde, Inc., Clifton, N.J.

Filed Aug. 13, 1980, Ser. No. 177,646
Int. Cl.³ B66C *23/26*
U.S. Cl. 212—181 **11 Claims**

1. In a crane boom pivot structure including a rotational crane boom pivot shaft, a crane turntable support bearing means for the ends of the pivot shaft and a crane boom section to rotate with the pivot shaft in unison therewith without relative rotational movement, the improvement comprising a cross axis locking pin for said pivot shaft and boom section including a screw-threaded portion, the pivot shaft having a

cross axis bore receiving said locking pin, an adjacent locking member fixed rigidly to the boom section and being engaged by said locking pin to lock the pivot shaft and boom section against relative rotation on the axis of the pivot shaft, and a nut



on the screw-threaded portion of the locking pin externally of the boom section, whereby the pivot pin can be placed through the cross axis bore of the pivot shaft and retracted therefrom while rotation of said nut is restrained and without necessitating access to the interior of said boom section.

4,337,868

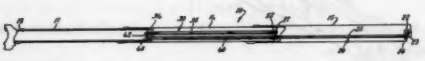
TELESCOPIC CRANE BOOM HAVING ROTATABLE EXTEND/RETRACT SCREWS

Narahari Gattu, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Feb. 19, 1980, Ser. No. 122,506

Int. Cl.³ B66C *23/06*

U.S. Cl. 212—267 **9 Claims**



1. In a multisection telescopic boom: a hollow base section; a hollow intermediate section telescopable within said base section; a hollow fly section telescopable within said intermediate section; a first elongated rotatable screw located within said boom and having its base end rotatably mounted on and connected to the base end of said base section; a first nut means rigidly mounted on the base end of said intermediate section and engaged by said first screw; a second elongated rotatable screw located within said boom and having its base end rotatably mounted on and connected to the base end of said intermediate section; a second nut means rigidly mounted on the base end of said fly section; and screw drive means operable to rotate both screws simultaneously to effect simultaneous axial telescopic movement of the axially movable boom sections, said screw drive means comprising at least one motor connected to effect rotation of said first screw, and means connected to said second screw to effect rotation of said second screw.

4,337,869

CLOSURE ASSEMBLY

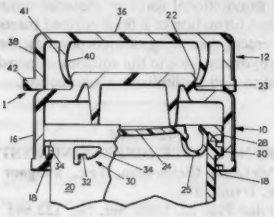
David P. Guinle, Memphis, Tenn., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 19, 1981, Ser. No. 225,878

Int. Cl.³ B65D *55/02*; H61J *1/00*; B65D *85/56*

U.S. Cl. 215—201 **9 Claims**

1. A closure assembly for a container having an annular neck opening comprising: a first closure member including means for closing said annular neck opening, releasable locking means on said first closure member for engaging cooperating locking means on the container neck, said locking means requiring a complex manipulation for removal of said first closure member from said container; a second closure member, means on said second closure member for closing said container neck opening, said last mentioned means permitting removal of said second closure member from said container neck by a relatively simple manipulation, and cooperating means on said closure members for releasably securing said closure members in stacked relationship.



4,337,870

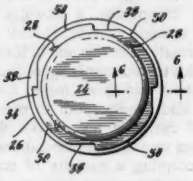
TAMPER-PROOF CLOSURE CAP AND METHOD OF FABRICATION

Frederick D. Keeler, 55 Strobel Rd., Trumbull, Conn. 06611

Filed Apr. 23, 1980, Ser. No. 142,964

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—252 **17 Claims**



1. An improved closure member comprising:

a. a closure body thermoformed of a polystyrene material;

b. said closure body including a generally annular shaped cap member, a generally annular shaped shoulder member integrally formed with said cap member and a generally annular shaped skirt member, said shoulder member having a plurality of arcuate cuts and a plurality of frangible bridge members mechanically formed therein, said bridge members extending between said cap and skirt members for maintaining said cap and bridge members in spaced relationship; and,

c. said frangible bridge members circumferentially positioned about said shoulder member and extending outwardly from said cap member to said skirt member.

4,337,871

CROWN CLOSURE

Raymond L. Tucker, Broadbeach, Australia, assignor to Mauri Brothers & Thomson (Aust.) Pty. Limited, New South Wales, Australia

Filed Sep. 12, 1980, Ser. No. 186,600

Claims priority, application Australia, Sep. 20, 1979, PE0595

Int. Cl.³ B65D *41/12*

U.S. Cl. 215—328 **3 Claims**

1. A crown seal cap blank of the kind comprising a central roof portion and a downwardly extending skirt with an outwardly flared and ribbed peripheral edge portion wherein each rib of the peripheral skirt portion is of substantially the same

breadth throughout its length, and wherein the breadth of a rib is greater than the distance separating adjacent ribs, whereby

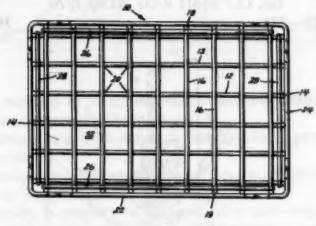
upon application to close a bottle the peripheral edge of each rib crumples to provide a central depression in the rib.

4,337,872

FURNACE BASKET

Dennis L. Wright, 911 Jamaica Dr., Fort Wayne, Ind. 46825

Filed Apr. 17, 1980, Ser. No. 141,179
Int. Cl.³ B65D *6/08, 6/32, 21/02*
U.S. Cl. 220—19 **3 Claims**



1. A furnace basket comprising:

a plurality of first parallel spaced rods of substantially equal length having upturned end portions,

a plurality of second parallel spaced rods of substantially equal length having upturned end portions, said second rods overlying and extending substantially perpendicular to said first rods to form a basket bottom and the upturned end portions defining a basket wall having four straight sides which join in corners,

said first and second rods having pressure welds at the intersections thereof,

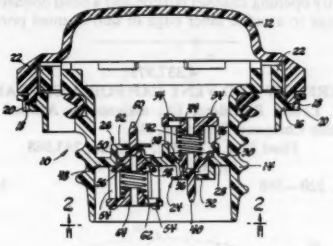
a first perimetral rod extending around the outside of the basket wall in engagement with the upper ends of said upturned portions and being welded thereto, four rods being welded to said upturned portions on the inner side of said wall with spaces between ends of said inner rods adjacent rod corners, said inner rods being disposed opposite and parallel to said first perimetral rod thereby sandwiching said upturned portions therebetween, the top ends of the upturned portions being substantially coplanar with said perimetral and inner rods thereby defining a supporting ledge for a superposed basket, said bottom being flat and said wall being upright, said bottom lying in a plane parallel to the plane of said top ends and sandwiching rods, and a second perimetral rod also extending around the outside of the basket wall in the mid-portion thereof, in engagement with said upturned portions and being welded thereto, the intersections of all of said rods forming a grid pattern for said bottom and wall, the welds between rods being pressure welds characterized by fusion at the grain boundaries without grain growth.

4,337,873

FUEL CAP WITH POPPET TYPE VALVES

Lawrence P. Johnson, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1980, Ser. No. 207,390
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—204 **4 Claims**



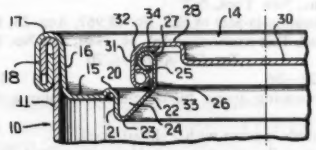
1. A fuel cap assembly comprising: a handle portion; a threaded closure portion adapted to be threadably inserted in a fuel fill tube for closing of a fuel tank, said threaded closure portion including a pair of valve body structure means each having a valve seat portion, a valve guide portion, and positioning means; and a pair of pressure differential operated valve means for cooperating with said valve body structure means for controlling the respective maximum and minimum pressure conditions in the fuel tank when the fuel cap assembly is in place to close the fill tube, each valve means including a valve member having a flexible conical portion cooperating with respective valve seat portions on said threaded closure portion and a guide stem disposed in respective valve guide portions on said threaded closure portion to facilitate alignment of the conical portion with its valve seat upon valve closure, retainer means positioned by respective positioning means on said threaded closure portion, and spring means disposed between said conical portion and said retainer means for urging said valve means to a closed condition and for permitting the respective valve members to operate to control the maximum and minimum pressure conditons in the fuel tank.

4,337,874

SNAP LOCK COVER END UNIT

James R. Hoenig, Tinley Park, and Salvador C. Mallorca, Downers Grove, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,785
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 **3 Claims**



1. A recloseable end unit for containers, said end unit comprising an end ring having means on an outer periphery thereof for attachment to a container body, said ring having an inner terminal upstanding axial flange terminating in an outwardly directed curl, and a removable cover, said cover including an end panel and an outer terminal depending axial flange terminating in an outwardly directed curl, said axial flanges being in telescoped relation with said ring curl being axially outwardly

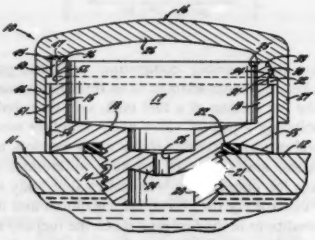
and radially inwardly compressively engaged between said end panel and said cover curl, said cover axial flange being connected to said end panel in a rounded corner, and said ring curl is seated in said rounded corner, said ring including an end panel portion, and hinge means mounting said ring flange on said end panel portion for facilitating radial inward deflection of said ring flange and ring curl during positioning and removal of said cover, said ring hinge means including an axially outwardly opening channel portion and a bend connecting said ring flange to a radial inner edge of said channel portion.

4,337,875

OVERFLOW AND VENT CAP FOR A CONTAINER

Dale E. Lyons, Belvidere, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Mar. 12, 1981, Ser. No. 243,068
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—368 **14 Claims**



1. A cap for closing an opening in the top of a container for liquid while venting the container to atmosphere, said cap comprising a lower, upwardly opening cup-shaped member, coupling means on the bottom of said cup-shaped member and adapted to interfit releasably with the opening in the container, a hole in said cup-shaped member and establishing communication between the container and the interior of said cup-shaped member, an upper, downwardly opening cup-shaped member telescoped with said lower cup-shaped member whereby a chamber is defined between the two members, means on said members and preventing axial separation and relative rotation of the members, a radially extending vent passage defined between said members and communicating with said chamber, and an axially extending vent passage defined between said members and communicating with said radially extending vent passage, the axially extending vent passage being open to atmosphere.

4,337,876

APPARATUS FOR DISPENSING ARTICLES

Joseph Thompson, Bergen County, N.J., assignor to Sterling Drug Inc., New York, N.Y.

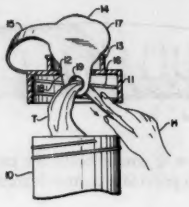
Continuation-in-part of Ser. No. 68,967, Aug. 23, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,140
Int. Cl.³ A47K *10/20*
U.S. Cl. 221—36 **13 Claims**

1. A dispensing device for articles comprising a container having:

a removable closure with a slitted opening,

a cap integrally joined to said closure by a strap, for closing said opening, and

a threading protrusion integral with the cap for receipt through the opening whereby an article may be engaged therewith and drawn from the container through the opening to initiate dispensing of the articles through the opening, said protrusion being sufficiently rigid to facilitate passage through said slitted opening, said threading protrusion having an opening therethrough through which part of an article in the container is inserted when the protrusion is extended through the opening in the closure, so that withdrawal of the protrusion from the opening pulls a part of the article along with it, whereby



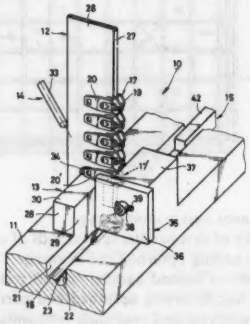
the article may be engaged and pulled from the container through the opening and said protrusion being thin enough to readily enter the slitted opening.

4,337,877

APPARATUS FOR SUPPLYING SLIDE FASTENER SLIDERS

Hisashi Doori, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Sep. 4, 1980, Ser. No. 184,029
Claims priority, application Japan, Sep. 7, 1979, 54-124216[U]
Int. Cl.³ B65H *9/00*; B23Q *7/10*
U.S. Cl. 221—171 **10 Claims**



1. An apparatus for supplying slide fastener sliders one at a time to a predetermined position, each of the sliders including a body having a pair of substantially parallel flat wings interconnected at one end by a neck and a pull tab pivotally connected to one of the wings, said apparatus comprising:

(a) a base having a groove with at least one end opened for passage of the sliders;

(b) track means extending upwardly from said base and having a longitudinal edge for carrying slidably thereon the sliders stacked sideways with their respective pull tabs arranged in the recumbent position for gravity delivery of the sliders to said groove;

(c) means on said base engageable with said recumbent pull tab of the leading slider for retaining the same on said longitudinal edge with the body of said leading slider positioned just above the groove without engaging said retaining means;

(d) means for releasing said leading slider pull tab from retaining engagement with said slider retaining means, and for orientating said leading pull tab from said recumbent position into the raised position where it is directed substantially perpendicularly to the slider wings and to said one end of said groove, thereby allowing the leading slider to fall into said groove; and

(e) means for feeding said slider which has fallen into said groove in and along the latter through said one open end to the predetermined position.

4,337,878

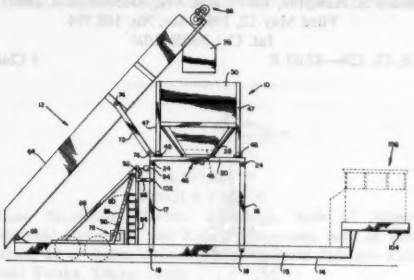
METHOD OF WEIGHING AND DISPENSING MATERIAL FROM A SURGE BIN

James D. Brock, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Division of Ser. No. 951,373, Oct. 10, 1978, Pat. No. 4,248,359, which is a continuation-in-part of Ser. No. 912,501, Jun. 5, 1978, Pat. No. 4,249,351. This application Sep. 26, 1980, Ser. No. 191,276

Int. Cl.³ B65G *27/24*

U.S. Cl. 222—1 2 Claims



1. A method of weighing and dispensing material from a surge bin comprising the steps of:

collecting said material in a batcher to a predetermined amount;

dispensing said collected material from said batcher into said surge bin;

dispensing a quantity of material from said surge bin while again collecting material in said batcher to said predetermined amount;

continuously weighing said surge bin and material therein as said material is dispensed from said surge bin to determine an initial weight of material dispensed from said surge bin;

interrupting dispensing of said material from said surge bin responsive to said predetermined amount of material being collected in said batcher;

storing said initial weight of material dispensed from said surge bin prior interruption of dispensing of said material from said surge bin;

dispensing said predetermined amount of collected material from said batcher into said surge bin;

weighing said surge bin and material therein to establish the weight of said surge bin and material therein;

dispensing a quantity of said material from said surge bin; and

continuously weighing said surge bin and material therein while material is being dispensed from said surge bin to determine a further weight of material dispensed from said surge bin.

4,337,879

SQUEEZING DEVICE

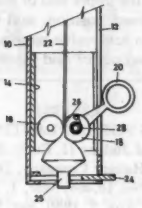
Rodney W. Park, Dana Hohenort Ave., Constantia, Cape Province, South Africa

Filed Jun. 16, 1980, Ser. No. 159,418

Int. Cl.³ B65D *35/28*

U.S. Cl. 222—102 6 Claims

1. A device for squeezing deformable tubes which have a neck and contain a material to be dispensed, the device comprising a housing, means for holding the neck of a tube relative to the housing, a slide in the housing, the housing defining a path of movement for the slide, a first roller mounted on the slide and having an axis which is perpendicular to the path of movement of the slide, a second roller mounted on the slide about an axis parallel to the axis of the first roller and having a flat face formed thereon, the first and second rollers being arranged so that a tube can be inserted between them, means for ensuring that the rollers progress in one direction only along a tube inserted between the rollers, means for rotating the second roller, the slide being movable in a direction



towards the neck of a tube in the housing so that on rotating the second roller in the first direction, the roller progresses along and squeezes the tube between itself and the first roller, while on rotation in the opposite, second direction the flat face is presented towards the first roller with the tube being a loose fit between the rollers and the slide so that the slide can move towards the neck of the tube.

4,337,880

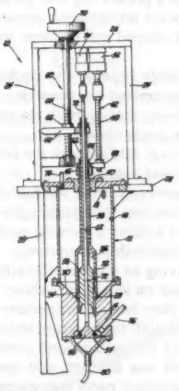
MEASURING AND DISPENSING ASSEMBLY

Walter J. Rozmus, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Apr. 11, 1980, Ser. No. 139,318

Int. Cl.³ G01F *11/34*

U.S. Cl. 222—152 11 Claims



1. A measuring and dispensing assembly (10) comprising; housing means (12) defining a measuring chamber (14), inlet valve means (28, 32) for controlling the flow of material into said measuring chamber (14), outlet valve means (54) for controlling the flow of material out of said measuring chamber (14), a control member (58) selectively movable into and out of said measuring chamber (14) to any one of various fixed adjusted positions for selectively varying the volume of said measuring chamber (14), and adjustment means (60) for selectively adjusting the fixed position of said control member (58) in said measuring chamber (14) so that said control member (58) remains stationary as said respective valve means (28, 32 and 54) open and close whereby said control member (58 may be moved to a fixed position in said measuring chamber (14)

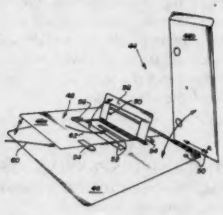
and remain there when said inlet valve means (28, 32) is open to fill said measuring chamber 14, said housing means (12) defining a supply chamber (16) above said measuring chamber (14), said inlet valve means (28, 32) being between said supply chamber (16) and said measuring chamber (14) and including a valve seat (28) about the upper end of said measuring chamber (14) and at the bottom of said supply chamber (16) and a valve member (32) having a valve periphery (34) for engaging said valve seat (28) about the upper end of said measuring chamber (14) when in the closed position, said control member (58) being disposed within said valve member (32) periphery (34) for movement into and out of said measuring chamber (14).

4,337,881

APPARATUS FOR IMPLANTING POCKETS

Joseph W. A. Off, and Judson H. Early, both of Dallas County, Tex., assignors to Haggar Company, Dallas, Tex.

Continuation of Ser. No. 16,404, Mar. 1, 1979, abandoned. This application Aug. 5, 1980, Ser. No. 175,576
Int. Cl.³ A41D 27/20; A41H 43/00
U.S. Cl. 223—1 22 Claims



8. An apparatus for folding back and securing the edges of a slit formed through a pocket bag and garment panel to form a pocket slot in a pocket implantation apparatus, comprising:

the slit having Y-shaped end portions and a straight central portion;

means for releasably holding the pocket bag and garment panel in predetermined relationship;

means for selectively folding back the central portion of the slit against the pocket bag;

means for selectively folding back the end portions of the slit against the pocket bag; and

means for adhesively securing the folded back edges of the slit to the pocket bag to complete the pocket slot.

14. Apparatus for holding a garment panel in a pocket bag in a predetermined relationship comprising:

a lower plate having an aperture therethrough for receiving a garment panel on its upper surface;

an intermediate plate having an aperture therethrough operatively aligned with the aperture through the lower plate and comprising first and second portions normally positioned adjacent one another, said intermediate plate for clamping the garment panel in engagement with the lower plate and for receiving a pocket bag on its upper surface;

means supporting the intermediate plate for pivotal movement about an axis extending parallel to the plane of the lower plate between a closed position wherein the intermediate plate extends parallel and adjacent to the lower plate to clamp a garment panel in engagement therewith and an open position wherein the intermediate plate extends at a substantial angle relative to the plane of the lower plate to facilitate insertion of a garment panel therebetween and also supporting the second portion of the intermediate plate for sliding movement laterally relative to the first portion and relative to the lower plate to facilitate removal of garment panels having pocket bags secured thereto;

an upper plate having an aperture therethrough operatively aligned with the apertures in the lower and intermediate plates; and

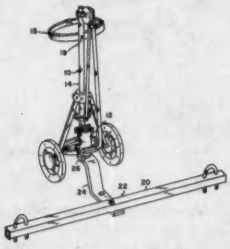
means supporting the upper plate on the first portion of the intermediate plate for pivotal movement about an axis extending parallel to the plane of the intermediate plate between a closed position wherein the upper plate extends parallel and adjacent to the intermediate plate to clamp a pocket bag in engagement therewith and an open position wherein the upper plate extends at a substantial angle relative to the plane to the intermediate plate to facilitate the insertion of a pocket bag therebetween.

4,337,882

GOLF CLUB CART CARRIER

Auborn R. Hampton, 1307 Garth Ave., Decatur, Ala. 35601

Filed May 12, 1980, Ser. No. 148,754
Int. Cl.³ B60R 9/08
U.S. Cl. 224—42.03 R 9 Claims



1. A golf club carrier comprising:

a golf club cart comprising:

elongated support means extending vertically and having a downwardly extending open end tubular end region, and

bag holding means comprising means for supporting a golf bag on said elongated support means, and including a lower positioned platform and a vertical support extending upwardly therefrom and a plurality of fixed, spaced lateral supports, transverse to and connected to said vertical support, and said vertical support joined to said elongated support means; and

vehicle supported attachment means adapted to be attached to the rear of an automotive vehicle, and including a generally vertical tubular socket member adapted to removably mate within said tubular end region of said elongated support means of said golf cart.

4,337,883

SKATEBOARD HOLDER

John R. Pate, 401 S. Barrington, Apt. 106, Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 47,164, Jun. 11, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,649
Int. Cl.³ A45C 11/24
U.S. Cl. 224—250 10 Claims

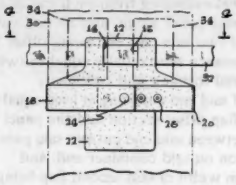
1. A skateboard holder comprising:

a hanger;

means for removably attaching said hanger to a belt;

strap means depending from at least one vertical edge of said hanger and adapted to be removably positioned under the upper wheels of a skateboard when said skateboard is vertically oriented and positioned against said hanger so that its wheels extend outwardly from said hanger, said strap means being wider along said at least one vertical

edge from which it is dependent than at the portion positioned under said skateboard upper wheels; and



means for fastening said strap means when positioned under said skateboard upper wheels, said means for fastening being adapted to support the weight of said skateboard.

4,337,884

SINGLE FACER

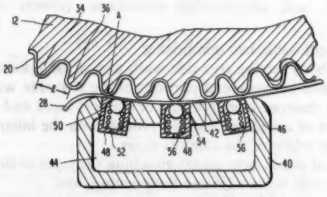
Tadashi Hirakawa; Hiroaki Sasashige, both of Mihara; Hiroyuki Takenaka, and Keiichi Katayama, both of Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,458

Claims priority, application Japan, Aug. 17, 1979, 54/113106[U]

Int. Cl.³ B65H *17/20, 17/28*

U.S. Cl. 226—52 **4 Claims**



1. In a single facer including a corrugating roll having flutes extending along its peripheral surface for forming a corrugating web,

(a) a pressure member opposed to said corrugating roll for pressing a liner web against the corrugated web to form a single-faced corrugated board;

(b) said pressure member having an arcuate surface substantially conforming to the contour of an arc extending through the tips of said flutes and having a length in the circumferential direction of said roll which is greater than the distance between two adjacent flutes thereof;

(c) means for providing a gaseous layer between said arcuate surface of said pressure member and the liner web;

(d) said pressure member including a chamber for receiving gas and said means for providing said gaseous layer includes a plurality of openings formed in said chamber;

(e) a plurality of spring-biased members positioned adjacent said openings and projecting slightly beyond said arcuate surface of said pressure member; and

(f) said spring-biased members being moved against said bias during operation of the single facer to provide spaces for passage of gas through said openings to provide said gaseous layer.

4,337,885

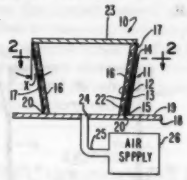
APPARATUS FOR GUIDING TAPE

Alfred F. Stahler, 5521 Big Oak Dr., San Jose, Calif. 95129

Filed Jun. 10, 1980, Ser. No. 111,170

Int. Cl.³ B65H *17/32*

U.S. Cl. 226—97 **14 Claims**



1. Apparatus for guiding a tape comprising, in combination:

a reference member having a reference surface against which the edge of the tape will be aligned,

a guiding member having a guiding surface with which the broad side of the tape will be substantially aligned,

means for mounting said guiding member and said reference member so that said guiding surface and said reference surface intersect,

means for moving the tape in the direction of the line of intersection of said guiding surface and said reference surface,

means for directing a gaseous stream to said guiding surface to provide a gaseous cushion between said surface and the tape, and

means for urging the tape along said guiding surface against said reference surface to steer the tape.

4,337,886

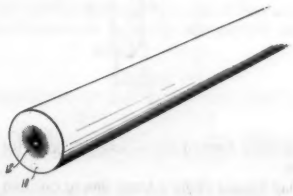
WELDING WITH A WIRE HAVING RAPIDLY QUENCHED STRUCTURE

William H. King, Higganum, and Bernard H. Kear, Madison, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 28,404, Apr. 9, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 146,949

Int. Cl.³ B23K *35/30*

U.S. Cl. 228—263 B **4 Claims**

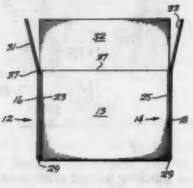


1. The method of fusion welding a superalloy workpiece which comprises heating the workpiece locally with a welding heat source and introducing weld filler wire into the vicinity of the workpiece where it is heated, to cause melting of the wire and fusion thereof with the superalloy workpiece, characterized by imparting to the weld filler wire a rapidly quenched structure prior to the introduction thereof into the vicinity of the heated workpiece, to make the wire at least partially amorphous or microcrystalline and to thereby provide a ductile portion on an otherwise brittle weld filler wire.

4,337,887
REINFORCED HALF SLOTTED CONTAINER

Thomas J. Gerard, Winter Haven, and John E. Gillmore, Sr., Brandon, both of Fla., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Sep. 18, 1979, Ser. No. 76,641
Int. Cl.³ B65D 5/56, 5/00
U.S. Cl. 229—16 R 1 Claim



1. A reinforced half slotted container formed from a single sheet blank comprising first, second, third and fourth side walls, each of said side walls being formed of an outer side wall and an inner reinforcing panel joined to said outer side wall along a first score line on the upper edge of said side wall, said side wall and reinforcing panel being formed from the same panel,

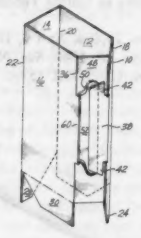
said inner reinforcing panel being adhered to said outer side wall and being of a height equal to the height of said outer side wall and a width substantially equal to the width of said outer side wall, and

bottom closure panels joined to each of said outer side walls along a second score line on the edge opposite said first score line.

4,337,888
NON-GLUED MANUFACTURERS JOINT

Kishor N. Kudalkar, Carol Stream, Ill., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Apr. 13, 1981, Ser. No. 254,002
Int. Cl.³ B65D 5/10, 5/42
U.S. Cl. 229—48 R 2 Claims



1. A manually formed manufacturer's joint for a container comprising

a first flap hinged along a score line to one end of said container, the length of said first flap hinge being less than the full length of the end of container,

said first flap having a pair of shoulders offset outwardly from said hinge a distance substantially equal to twice the width of the material forming the container, the length of said offset section being equal to the length of said hinge and the length of said first flap at said shoulders being the maximum length of said first flap,

a panel hingedly joined along a score line to the opposite end of said container,

a second flap within and hinged along a score line to said panel, said second flap hinge being within said panel and parallel to said opposite end,

said second flap further being formed by a pair of side cuts in said panel extending from each end of said second flap hinge to said panel hinge, and an end cut extending between said two side cuts and being offset from said panel hinge a distance substantially equal to twice the width of said material forming said container,

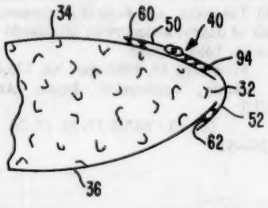
the length of said end cut being at least equal to the length of said first flap offset section and the panel side cuts being parallel between said end cut and said panel hinge to form a projection on said container end, and

the maximum width of said second flap being slightly larger than the maximum width of said first flap, whereby said first flap may be inserted through said aperture, its offset section may fit within the aperture formed by said projection and it may be locked in place by said second flap being rotated into the plane of said panel.

4,337,889
RECLOSABLE BAG WITH SLIDE FASTENER

George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed Feb. 6, 1980, Ser. No. 119,063
Int. Cl.³ B65D 33/20
U.S. Cl. 229—62 3 Claims



1. A reclosable bag comprising

a bag body having two side walls and an elongated opening formed between end portions of the two side walls,

a slide fastener having a pair of support tapes and a pair of rows of coupling elements mounted on the inner longitudinal edges of the support tapes,

a pair of attachment means attaching the tapes to the respective side walls adjacent the opening, and

an easy peelable adhesive securing an inner portion of one support tape to the opposite side wall from which the one support tape is attached by the corresponding attachment means.

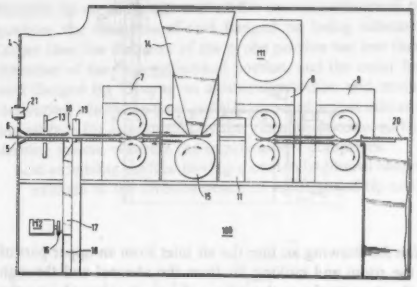
4,337,890
METHOD OF PREPARING AND PROCESSING RECEIPTS FOR CUSTOMERS OF PARKING LOTS OR THE LIKE

Hans Buchmann, Oetwil, Switzerland, assignor to Zühlke Engineering AG, Schlieren, Switzerland

Division of Ser. No. 22,317, Mar. 20, 1979, Pat. No. 4,257,551.
This application Aug. 6, 1980, Ser. No. 176,488
Claims priority, application Switzerland, Mar. 21, 1978, 3063/78
Int. Cl.³ G06K 1/08
U.S. Cl. 234—1 3 Claims

1. A method of converting a sheet-like carrier of information into two receipts, comprising the steps of applying legible information to at least one portion of the carrier; applying encoded information at least to another portion of the carrier; and separating said one portion from said other portion of the carrier so that each of the separated portions constitutes a discrete receipt and the entire legible information is applied at least to that receipt which is constituted by said one portion of

the carrier prior to said separating step whereas a portion of the encoded information is applied to that receipt which is constituted by said other portion of the carrier prior to said separating step so that neither of said receipts contains the entire legible information together with the entire encoded



information, said second applying step including applying a first part of said encoded information to said one portion and a second part of said encoded information to said other portion so that, upon completion of said separating step, each of said receipts contains only the respective part of the encoded information.

4,337,891

ELECTRIC CONTROL DEVICE FOR A CENTRAL HEATING BOILER

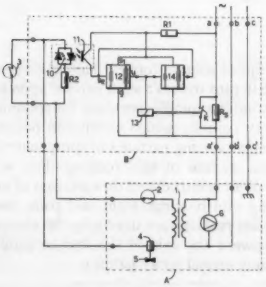
Paulus T. J. Overman, Apeldoorn, and Henricus J. Slats, Ugchelen, both of Netherlands, assignors to Veg-Gasinstituut N.V., Apeldoorn, Netherlands

Filed Jun. 17, 1980, Ser. No. 160,154

Claims priority, application Netherlands, Jun. 19, 1979, 7904801

Int. Cl.³ F24D *3/00, 5/10*

U.S. Cl. 236—9 A **2 Claims**



1. An electric control device for a central heating boiler which is provided with a pump, a burner, an electrically operated shut-off valve for controlling the fuel supply to the burner and an electric control circuit comprising a supply transformer having a primary winding for connection to voltage mains and a series circuit connected to the secondary winding thereof, the series circuit including the control winding of the electrically operated shut-off valve, a first thermostat controlled contact and a maximum thermostat controlled contact and wherein the pump is connected in parallel with the primary winding of the supply transformer, characterized in that the device is provided with a circuit for external mounting on the boiler connected to the supply voltage mains and the contact of the first thermostat and said circuit comprising a high resistance value series resistor connected between the supply mains and the primary winding and the pump of the boiler, a relay having a normally open contact connected in parallel to the series resistor such that when at least one of the first thermostat and the maximum thermostat contacts changes state the relay is energized thereby short circuiting the series resistor connected in parallel to the contact thereof whereby the full supply voltage is applied to the pump and the primary winding of the transformer, and wherein when the first thermostat contact is open and the maximum thermostat contact is closed the energizing of the relay and thereby the operation of the pump is maintained for a predetermined time.

4,337,892

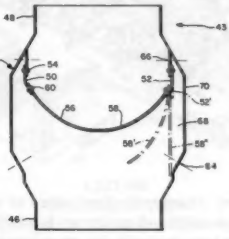
DRAFT CONTROL ARRANGEMENT FOR VENT OF COMBUSTION APPARATUS

Werner Diermayer, 1275 Panorama Dr., Lafayette, Calif. 94549, and Luitpold Kutzner, Marschnerstrasse 78, D-8000 Munich, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,046

Int. Cl.³ G05D *23/02*

U.S. Cl. 236—93 R **8 Claims**



1. For use in a heating apparatus having a damper for controlling the flow of exhaust gases through a vent, the combination of means forming a flow passage, flow control means comprising first and second actuating elements formed in the shape of blades disposed in the vent for opening and closing the flow area of the passage in response to temperature change, said first element being formed of a shape memory material which rapidly deforms between two different shapes when heated to its phase change temperature, said second element being formed of a thermostat material which changes shape substantially proportional to temperature change, said first and second elements coacting to provide a rapid rate of flow passage opening during the initial phase of temperature rise following burner ignition followed by a rate of flow area opening substantially proportional to further temperature rise.

4,337,893

MULTI-PHASE MODULAR COMFORT CONTROLLED HEATING SYSTEM

Staunton O. Flanders, Highland Park, and William A. Ness, Kildeer, both of Ill., assignors to Energy Savings Parhelion, Northbrook, Ill.

Continuation-in-part of Ser. No. 137,737, Apr. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 104,191, Dec. 17, 1979, abandoned. This application Nov. 20, 1980, Ser. No. 208,509

Int. Cl.³ F24H *3/06;* **F24D** *5/18*

U.S. Cl. 237—7 **31 Claims**

1. A gas-fired space heating system, comprising:

(a) a plurality of modular incremental gas-fired burner assemblies each including

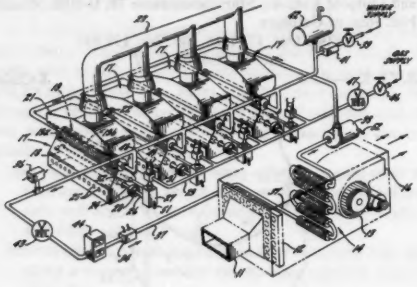
a housing,

heat exchanger means mounted in the housing for effecting heating of a fluid in contact therewith, said heat exchanger means comprised of a thermally conductive

material with a heat transfer surface area that is large enough relative to the volume of said fluid in contact therewith and the flow rate of said fluid so that thermal energy is transferred to said fluid substantially instantaneously when said heat exchanger means is heated, and

a gas burner mounted in the housing for effecting heating of the thermally conductive material of said heat exchanger means;

(b) a low mass closed loop circulation system for transferring heat from said fluid to a space to be heated, said circulation system including moving means for continuously moving said fluid into contact with said heat exchanger means to effect heating of said fluid when any one of said gas burners is in operation, said moving means circulating substantially all of the fluid confined within said circulation system through said plurality of heat



exchangers, whereby the heat added to said fluid by the firing of one additional gas burner is manifested by a direct increase in temperature in the space being heated without a delay due to the time needed to heat a mass of ambient temperature fluid and heat is continuously removed from said system at a rate that is substantially the same as the rate at which heat is added by said gas burners;

means for measuring the air temperature in said space;

firing means for individually firing the gas burner in each of said burner assemblies to effect heating of the associated heat exchanger means and incremental heat transfer to said fluid; and

means for comparing the air temperature in a space to be heated with a reference temperature and for activating said firing means to fire one or more of said burners as a function of the difference between said measured space temperature and said reference temperature.

4,337,894

WALL PROTECTIVE HEATING SYSTEM

James T. Shupe, Rt. 2, E. Brow Rd., Trenton, Ga. 30752

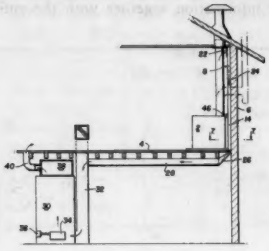
Filed Feb. 25, 1980, Ser. No. 124,383
Int. Cl.³ F24C 5/04
U.S. Cl. 237—46 **12 Claims**

1. A system for protecting a wall of a building from heat emitted by a free standing stove near the wall for burning solid combustible materials, comprising,

a channel having an internal airflow passage and an air inlet opening at the upper end of the airflow passage to receive air from an upper part of the room, said channel including a thermally conductive panel which has a width for laterally spanning the space between the stove and the wall, said channel being formed of a plurality of interconnected sections of U-shaped cross section,

means for mounting the channel on a wall adjacent to the stove where one surface of the panel faces said stove to receive heat therefrom and the opposite surface of the panel faces the airflow passage to heat air in the channel,

duct means having an inlet end connected to the airflow passage in the channel and an outlet end which is in the building and spaced from the stove and channel,



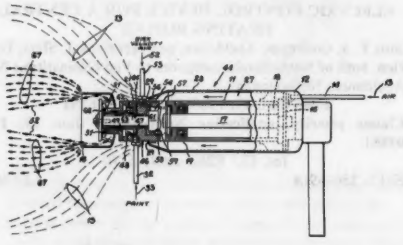
a fan for drawing air into the air inlet from an upper part of the room and moving air from the channel and through the duct to the outlet where the air is released into the building.

4,337,895

HIGH SPEED ROTARY ATOMIZERS

Thomas Gallen, 1516 Buck Rd., Feasterville, Pa. 19047

Filed Mar. 17, 1980, Ser. No. 130,787
Int. Cl.³ B05B 3/04, 7/00, 1/06
U.S. Cl. 239—7 **6 Claims**



1. In a high speed rotary atomizer having a vane rotated by air which vane in turn rotates a shaft carried upon bearings and which shaft includes a spindle extension for rotating a disc, the method of spray painting which consists in passing a second source of air and atomizing particles of spray material upon the inner peripheral surface of said rotating disc, wherein said second source of air is introduced downstream of said bearings for fluid sealing said bearings from said paint particles and, whereby the paint particles are drawn by the second source of air inwardly toward the axis of the disc to produce an improved doughnut-shaped spray pattern.

4,337,896

ULTRASONIC FUEL ATOMIZER

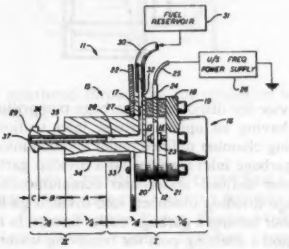
Harvey L. Berger, Poughkeepsie, and Charles R. Brandow, Highland, both of N.Y., assignors to Sono-Tek Corporation, Poughkeepsie, N.Y.

Continuation of Ser. No. 46,641, Jun. 8, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,397
Int. Cl.³ H04F 17/00
U.S. Cl. 239—102 **5 Claims**

1. An ultrasonic atomizer for producing a dispersed spray of finely divided liquid particles, the atomizer including a driver means having an output plane for providing longitudinal vibratory displacement at a predetermined ultrasonic operating frequency; a vibration amplifying means in the form of a stepped ultrasonic horn including a first cylindrical portion

having an input end coincident with the output plane of the driver means, the length of the first cylindrical portion being equal to a quarter wavelength at said operating frequency, and a second cylindrical probe portion extending from the other end of the first cylindrical portion and having a diameter substantially smaller than the diameter of the first portion; a flanged tip on the outer end of the second cylindrical probe portion, the diameter of said flanged tip being substantially larger than the diameter of the probe portion but less than the diameter of the first cylindrical portion, and the outer face of said flanged tip forming an atomizing surface; and means for delivering a liquid to flow radially outward across said atomizing surface for atomization by the vibrations produced by said driving means, wherein the improvement comprises:

said atomizing surface having a convexly conical shape that extends to the circumference of said flanged tip and produces a substantially conical spray pattern of finely divided droplets from liquid flowing thereover when the atomizer is driven at said operating frequency, the axis of said conical shape being parallel to the direction of longitudinal vibration, and the apex angle of said conical shape being supplementary to the spray cone angle of the atomized liquid;



the flanged tip having a short cylindrical portion contiguous to and having the same diameter as the base of the conical atomizing surface for assuring that the atomizing surface vibrates only in the longitudinal mode; and

the dimensions of said stepped ultrasonic horn conforming to dimensions calculated from the solution of the time-independent differential equation for the propagation of longitudinal waves in a solid medium at said predetermined ultrasonic operating frequency.

4,337,897

PROCESS AND DEVICE FOR PRODUCING THE REFRACTORY LINING OF METALLURGICAL VESSELS

Erich Höffken, Dinslaken, and Karl-Dieter Beckers, Neunkirchen-Seelscheid, both of Fed. Rep. of Germany, assignors to Martin & Pagenstecher GmbH, Cologne-Mulheim, Fed. Rep. of Germany

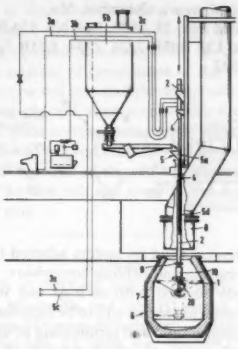
Division of Ser. No. 943,840, Sep. 19, 1978, Pat. No. 4,268,543. This application Nov. 7, 1980, Ser. No. 204,988

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742415

Int. Cl.³ B05B *3/02*

U.S. Cl. 239—214.25 **6 Claims**

1. A device for centrifugally applying a refractory mass to the walls of the vessel by slinging the same thereon in a direction normal to the walls which device comprises a slinger unit disposable within said vessel, said slinger unit comprising a slinger head having a slinger wheel, a slinger motor driving said slinger wheel, at least one supply conduit for supplying refractory mass to said wheel and means for forming the supplied refractory mass and a binder into lumps, said slinger wheel being disposed on one end of a shaft which shaft is



extendable into said vessel and a second motor for driving said slinger unit about the axis of the vessel.

4,337,898

BURNER HEADS

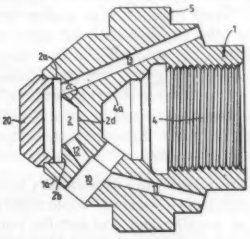
Alfred F. Cleall, Warnham, England, assignor to Babcock Product Engineering Ltd., Sussex, England

Filed Jul. 15, 1980, Ser. No. 169,155

Claims priority, application United Kingdom, Jul. 17, 1979, 7924826

Int. Cl.³ F23D *11/16*

U.S. Cl. 239—422 **4 Claims**



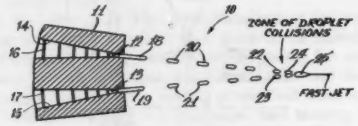
1. A burner head comprising a body part and, at one end of the body part, a chamber formed by the body part and a cap that has been sealingly welded around its periphery to the body part, the body part having a plurality of straight bores extending to the end at which the chamber is formed from the other end and diverging from each other towards the chamber end, the body part also containing, for each bore, two straight ducts having longitudinal axes that meet in the bore, one duct leading to the bore from the end of the body part remote from the chamber and the other duct leading to the bore from the chamber, and one or more further ducts extending through the body part to the chamber from the end of the body part remote from the chamber, said straight bores adapted to communicate with a first fluid source and said straight ducts and said further ducts adapted to communicate with a second fluid source.

4,337,899

HIGH PRESSURE LIQUID JET NOZZLE SYSTEM FOR ENHANCED MINING AND DRILLING

Bruce P. Selberg, Rolla, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Feb. 25, 1980, Ser. No. 124,061
Int. Cl.[3] B05B 1/26, 1/34; E21B 7/18
U.S. Cl. 239—543 14 Claims



1. A high pressure fluid jet system adapted for use in cleaning, cutting and drilling comprising:

a nozzle body formed with at least one internal tapered conduit connected at one end to be supplied from a source of high pressure fluid and terminating at its other end at a jet exit orifice through which a first high velocity linear jet stream is expelled which impinges at a point; and

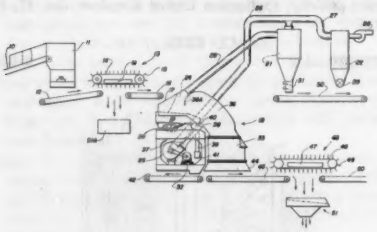
passive means formed within said nozzle body for causing said linear jet stream to break into droplets in a controlled manner.

4,337,900

METHOD OF RECOVERY OF ALUMINUM FROM WASTE MATERIAL

Robert M. Williams, Ladue, Mo., and Lucian C. Bielicki, Ridgefield, Conn., assignors to Bi-Metal Corp., White Plains, N.Y.

Continuation of Ser. No. 83,573, Oct. 11, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,463
Int. Cl.[3] B02C 19/12
U.S. Cl. 241—14 2 Claims



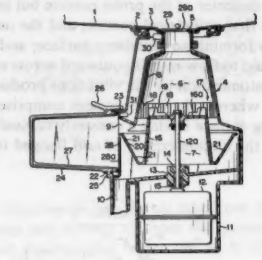
1. A method for recovery of a substantially contaminant free grade of aluminum from a stream of waste material containing an assortment of metallic and non-metallic components, including throw away containers having an aluminum content; the method comprising: treating the waste material to a primary shredding step followed by a primary magnetic classification step to separate out non-magnetic materials; subjecting the output of the magnetic classification step to a secondary shredding and air separating step in which the output of the magnetic classification is classified essentially by weight, the secondary shredding effectively segregating the aluminum and attached magnetic components so as to shred and work the aluminum components to free it from magnetic components and densify and ball the free components into a high concentration of aluminum components separated from other components; and treating the thus densified and balled up segregated components of the classified components to a further classification step for removing magnetically responsive densified and balled up components and dirt from a high grade of densified and balled up free aluminum.

4,337,901

DEVICE FOR DISPOSING OF GARBAGE

Katsumi Ogura, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 12, 1980, Ser. No. 120,873
Claims priority, application Japan, Feb. 17, 1979, 54-17456
Int. Cl.[3] B02C 18/42
U.S. Cl. 241—46 B 7 Claims



1. A device for disposing of garbage comprising:

a case having an upper garbage inlet section, a garbage dividing chamber defined under and communicating with said garbage inlet section and a divided garbage disposal chamber defined under and communicating with said garbage dividing chamber, said divided garbage disposal chamber having a garbage outlet formed in its peripheral wall and a draining port for removing water therefrom;

a motor;

a garbage dividing mechanism disposed within said garbage dividing chamber and driven by said motor for finely dividing garbage;

a rotary draining member provided within said garbage disposal chamber to receive finely divided garbage from said garbage dividing mechanism and driven by said motor for causing the received garbage to be discharged from said garbage outlet by centrifugal force; and

a garbage sack case supporting a garbage sack in an interior space so that finely divided garbage discharged from said garbage outlet is received in said garbage sack, said case including water passing means between said interior space and said garbage disposal chamber for preventing garbage in said sack from moving into said garbage disposal chamber and said case further defining an inclined flow path for draining away water entering said garbage sack through said water passing means.

4,337,902

INSULATION ANTI-STATIC AND BLOWING MACHINE

Melvin C. Markham, Seattle, Wash.

Filed Feb. 1, 1980, Ser. No. 117,433
Int. Cl.[3] B02C 13/288
U.S. Cl. 241—56 4 Claims

1. An apparatus for fluffing, treating and blowing insulation, comprising:

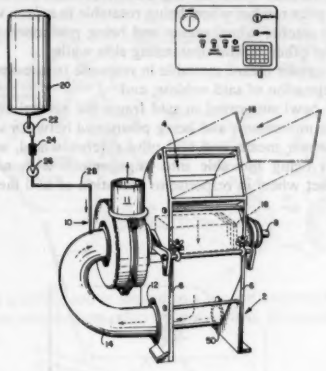
hopper means to receive and temporarily store insulation;

hammer mill means to beat the insulation until it is fluffed;

blower means for moving the insulation from said hammer mill means through a conduit means to said blower means and from there to a remote location, said blower means including impeller means which comprises a shaft and a plurality of impeller blades extending outwardly therefrom; and

means introducing anti-static liquid into said conduit means, at such a position relative to said blower means and at such a rate and with such a trajectory relative to the airflow through said conduit means resulting from the operation of said blower means that the anti-static liquid impinges upon an exposed end of the rapidly turning shaft

of said impeller means in said blower means, wherein the anti-static liquid, upon contact with the rapidly turning



shaft, is splattered throughout the insulation within said blower means.

4,337,903

METHOD OF AND A DEVICE FOR CONTROLLING THE EXCHANGE OF ROLLS OF A WEB-LIKE MATERIAL

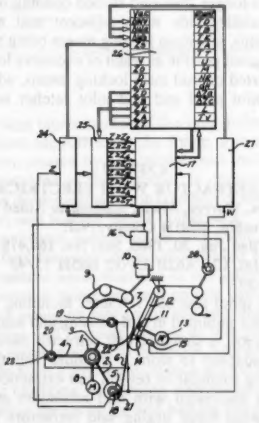
Peter Kessler, Plauen; Joachim Kaiser, Plauen; Wolfgang Keil, Plauen; Hans-Günter Despang, Dresden; Jürgen Haufe, Koenigsbrueck, and Matthias Kieser, Dresden, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jul. 31, 1980, Ser. No. 175,195

Claims priority, application German Democratic Rep., Aug. 16, 1979, 215006

Int. Cl.[3] B65H *19/20, 19/12*

U.S. Cl. 242—56 A 8 Claims



1. A method of controlling the exchange of rolls of a web-like material having an adhesive leading end portion comprising the steps of counting the number of revolutions of the old roll and counting the number of length units unrolled from the old roll, computing from at least two separate intervals of the counted number of revolutions and corresponding intervals of the counted number of web length units parameters including the diameter of the central supporting reel, the web thickness and the number of counting pulses per one revolution of the old roll, the total number of revolutions needed for unrolling the old roll; computing from the ascertained total number of revolutions and from preset parameters including the length of the adhesive leading end portion of the new roll and the permissible length of the residual trailing end portion of the old web, a set of control numbers for initiating respective steps of the roll exchanging operation; comparing the control numbers with the actual number of revolutions of the old roll to start swinging of the new roll into its adhering position in proximity to the web of the old roll, then accelerating the new roll to a circumferential speed corresponding to the speed of movement of the web of the old roll and holding the latter speed constant, pressing the moving web of the old roll against the adhesive end portion of the new roll and severing the remainder of the web of the old roll.

4,337,904

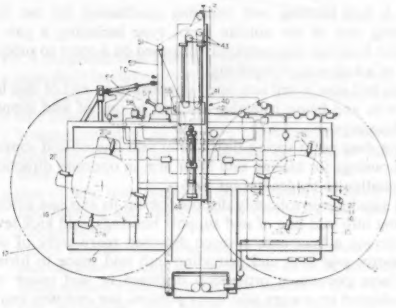
WEB TENSION CONTROL METHOD AND APPARATUS

Peter S. Miller, Waterville, and Jack H. Myers, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 22, 1980, Ser. No. 199,172

Int. Cl.[3] B65H *59/00, 19/08*

U.S. Cl. 242—75.53 6 Claims



1. The method of controlling tension in a web of tensionally fragile material drawn by a constant speed web processing machine from either one of two supply rolls, wherein the web from one supply roll is spliced to the web from the other supply roll when the drawn web is shifted from one supply roll to the other, comprising the steps of:

(1) entraining a loop of the web around a first shiftable festooning roller, the position of said first festooning roller being determined by the difference between the web tension force exerted thereon and a constant fluid pressure force exerted on the first festooning roller by a first cylinder;

(2) applying a drag force to the supply roll which varies as a function of the displacement of the first festooning roller to maintain a controlled range of tension in the web;

(3) entraining another loop of the web around a second shiftable festooning roller, the position of said second festooning roller being determined by the difference between a constant fluid pressure force exerted on the second festooning roller by a second cylinder and the web tension force exerted on the second festooning roller, said second festooning roller being shiftable by a web tension force in excess of the normal operating tension in a direction to reduce web tension; and

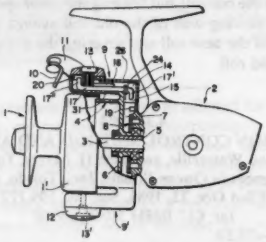
(4) restricting any movement of said second festooning roller in a direction to increase web tension to a rate within the control limits of said first festooning roller, whereby the fluctuations in web tension accompanying the splicing of the web to shift from one supply roll to the other may be absorbed by the second festooning roller.

4,337,905

BAIL LATCHING AND RELEASING MECHANISM FOR SPINNING REEL OF OUTSIDE SPOOL TYPE

Kounin Sazaki, Fukuyama, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan

Continuation of Ser. No. 24,332, Mar. 27, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,394
Claims priority, application Japan, Apr. 7, 1978, 53/45942
Int. Cl.[3] A01K *89/01*
U.S. Cl. 242—84.2 G 8 Claims



1. A bail latching and releasing mechanism for use in a spinning reel of the outside spool type including a pair of support housings symmetrically disposed on a rotor to support ends of a bail arm, comprising:

(a) a bail arm, a bail arm lever coupled to an end of said bail arm, and being rotatably secured to one of said support housings,

(b) a dead point spring disposed in said one of said support housings for biasing said lever arm in opposite directions relative to its dead point, and

(c) a kick lever rotatably disposed about its axis and extending into said one of said support housings, said kick lever having a bent end, a space disposed rearwardly of said rotor, said bent end extending into said space to form a lever portion, a projection disposed in said space and adapted to engage said lever portion, the opposite end of said kick lever being bent into said bail arm lever to form a locking portion to thereby permit locking engagement therewith, and

wherein said bail arm lever is provided with a circular bottom surface, said bottom surface being formed with a recess adapted to receive said locking surface, said recess having one end functioning as a locking surface adapted to permit surface contact with said locking portion in the fishing line release position, and having the other end provided with a stopper adapted to permit surface engagement with said locking portion in the fishing line rewinding position.

4,337,906

LOCK UP MECHANISM FOR SEAT BELT RETRACTOR

Arduino Colasanti, East Detroit, and Philip L. Francis, Bloomfield Hills, both of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 18, 1980, Ser. No. 208,007
Int. Cl.[3] A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A 7 Claims

1. A seat belt retractor for installation in a vehicle comprising:

a frame having upstanding side walls;

a spool rotatably supported in said frame;

seat belt webbing stored on said spool;

main ratchet wheel means having circumferential ratchet teeth and being rotatable with said spool, said main ratchet wheel means being positioned adjacent to one of said upstanding side walls;

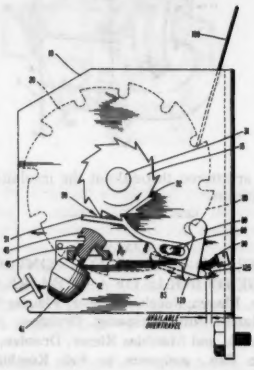
main locking means for locking said main ratchet means;

a slotted opening in each of said upstanding side walls, said main locking means being pivotably supported in said slotted openings;

a pilot ratchet wheel having circumferential ratchet teeth, said pilot ratchet wheel being rotatable in unison with said main ratchet wheel means and being positioned adjacent to the other of said upstanding side walls;

inertia sensor means movable in response to acceleration or deceleration of said vehicle; and

a pilot pawl supported in said frame for pivotal and transverse movements and being positioned between said inertia sensor means and said pilot ratchet wheel, said pilot pawl being movable into engagement with said pilot ratchet wheel in response to actuation of said inertia sensor means, whereby said main locking means is moved by said pilot pawl into locking engagement with said main ratchet wheel means, thereby locking said retractor;



said slotted opening in said other of said upstanding side walls adjacent said pilot ratchet wheel being provided with an elongated portion adjacent an end thereof which supports said main locking means so that the said slotted opening is longer than said slotted opening in said one of said upstanding side walls adjacent said main ratchet wheel means, said main locking means being movable into said elongated portion as result of excessive locking forces being exerted on said main locking means, whereby loads on said pilot pawl and said pilot ratchet wheel are reduced.

4,337,907

SEAT BELT RETRACTOR WITH ELECTRICAL SWITCH

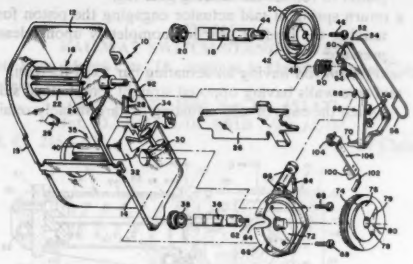
William R. Fox, Warren, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 30, 1980, Ser. No. 164,478
Int. Cl.[3] A62B *35/00;* B65H *75/48*
U.S. Cl. 242—107.7 16 Claims

1. In a dual spool seat belt retractor including a housing, a lap belt retractor mounted in said housing and adapted to store a lap belt thereon, a shoulder belt retractor mounted in said housing and adapted to store a shoulder belt thereon, said retractors being rotatable in rewind and extraction directions, rewind means associated with said retractors and normally exerting a rewind force urging said retractors towards the rewind direction, tension relieving means operatively associated with said shoulder belt retractor and effective in an operable position to relieve the rewind force associated with said shoulder belt retractor and ineffective in an inoperable position to relieve said force and release means operable to position said tension relieving means in its inoperable position, the improvement comprising:

electric switch means for the control of an electrically activated signal device, said switch means being mounted on said housing and actuated by motion of said release means,

whereby said switch means is moved to a first electrical position when said tension relieving means is in its inoperable position and is moved to a second electrical position when said tension relieving means is in its operable position.

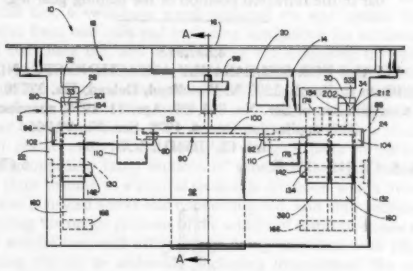


4,337,908

CARTRIDGE-LOADING APPARATUS FOR TAPE RECORDER DRIVES

Dewey M. Sims, Jr., Wayne, Mich., assignor to Northern Telecom Systems Corporation, Ann Arbor, Mich.

Filed May 14, 1980, Ser. No. 149,768
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—198 **40 Claims**



1. A cartridge tape recorder of the type including a frame, a recording head supported by the frame, a motor and a tape drive member rotated by said motor, and loading means for holding a cartridge in the recorder in operable engagement with the tape drive member upon insertion of the cartridge into the recorder, said loading means comprising:

a carriage slidably supported on said frame for movement from a first, forward position to a second, rearward, operating position upon insertion of the cartridge, said tape drive member being mounted on said carriage;

first spring means on said frame and engaging said carriage for biasing said carriage toward its first position;

lever arm means pivoted to the frame, said arm means being movable from a first position to a second operating position for engaging a cartridge inserted into the recorder, positioning the cartridge and locking the cartridge in the recorder in operable engagement with the tape drive member and the recording head;

a second spring means at least partially supported on said frame and engaging said lever arm means for biasing said lever arm means from said first position to said second position; and

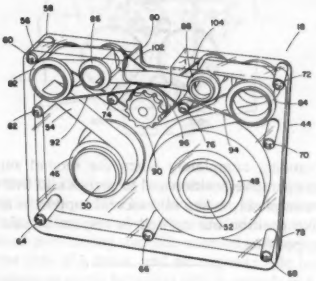
camming means acting between said lever arm means and said carriage for enabling movement of said lever arm means from said first position to said second position upon insertion of the cartridge as said cartridge engages the drive member causing the carriage to move from its first position to its second position.

4,337,909

MAGNETIC TAPE CASSETTE

Arne M. Harja, Bellevue, Wash., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 24, 1980, Ser. No. 200,286
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—199 **26 Claims**



17. A magnetic tape system comprising:

a tape deck including two capstans, a magnetic head, two tape guide pins and two reel drive mechanisms; and

a tape cassette including;

a housing including an aperture configured to receive said magnetic head when the cassette is loaded in said tape deck;

a pair of tape reels including tape rotatably secured within said housing and adapted to be driven by said reel drive mechanisms;

a pair of annular capstan actuators rotatably secured within said cassette housing and located so as to be coaxial with said capstans when the cassette is loaded in said tape deck;

a pair of annular tape guide actuators rotatably secured within said cassette housing and located to be coaxial with said tape guide pins when the cassette is loaded in said tape deck; and

means for simultaneously rotating both of said annular capstan actuators and both of said annular tape guide actuators.

4,337,910

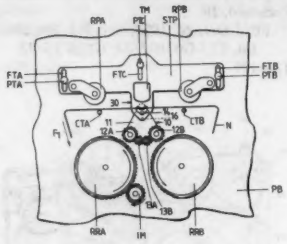
TAPE TENSIONING DEVICE FOR TAPE RECORDERS OF THE CASSETTE TYPE

Giovanni Santoro, Via Campo di Mele 55, Roma, Italy

Filed Sep. 5, 1980, Ser. No. 184,215
Claims priority, application Italy, Sep. 5, 1979, 50183 A/79
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—204 **6 Claims**

1. In a cassette tape recorder comprising a frame having a bottom plate, two toothed members journaled on said plate and adapted to receive the tape-bearing reels of a cassette, a reversible drive gear engageable alternatively with each toothed member, a first support mounted on said plate for limited guided movement relative to said plate, a magnetic head and pinch rollers mounted on said first support and spaced capstans projecting from said bottom plate in positions to cooperate with the pinch rollers in engaging a tape, a tape tensioning device comprising an elastically biassed movable second support, a train of an even number of intermeshed gears journaled on said second support, means mounting said second support for limited movement with respect to said first support to an advanced operative position wherein the two outer gears of said train are meshed, respectively, with the two toothed members to cause rotation of the member not engaged by the drive

gear in the direction opposite to that of the member engaged by the drive gear, and to an inoperative position when the tape length between the reels has been tightened, the means mounting the second support on the first support comprising matching engagement means adapted to prevent the first support



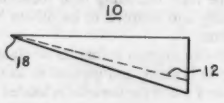
from advancing completely when the second support is in advanced operative position and to permit said first support to advance completely when said second support is in advanced inoperative position but rotated in respect of said advanced operative position.

4,337,911

NON-SPINNING PROJECTILE

Abraham Flatau, 2004 Stockton Rd., Joppa, Harford County, Md. 21085

Filed Mar. 24, 1980, Ser. No. 132,721
Int. Cl.³ F42B *13/00*
U.S. Cl. 244—3.1 **1 Claim**



1. A non-spinning projectile for launching at a predetermined velocity at a given target comprising:

a tapered body having a pair of outward longitudinal extensions on the underside of said body, said extensions having a surface formed into a leading edge for producing upon launch at said predetermined velocity a shock wave which causes pressure upon said underside of said body to generate lift, said body, including terminal ballistic means for inflicting destructive force upon said target upon delivery of said body at said target, said tapered body having a generally pyramidal shape with a transverse cross-section that is concavo-convex, and

said underside of said body comprises three, contiguous, triangular, planar walls.

4,337,912

FAIL SAFE RETRACTABLE LANDING GEAR UNIT FOR MODEL AIRCRAFT

William J. Watton, 1421 Aries Ct., Chula Vista, Calif. 92011

Filed Mar. 26, 1980, Ser. No. 133,974
Int. Cl.³ A63H *27/02*; B64C *25/26*
U.S. Cl. 244—102 R **2 Claims**

1. A fail safe retractable landing gear unit, comprising:

a unitary bracket having side walls and a top wall interconnecting the side walls;

a hinge block pivotally mounted between said side walls and having a landing gear leg secured thereto;

said side walls having longitudinally extended portions;

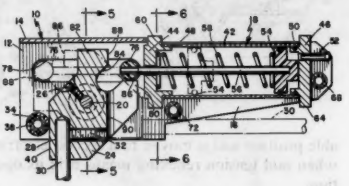
a single acting fluid pressure operated actuator mounted between said extended portions and having a piston therein, with a piston rod coupled to said hinge block to retract and extend the landing gear leg;

said actuator having an inlet for applying pressure to said piston to retract the landing gear leg;

a return spring in said actuator engaging the piston for extending the landing gear leg completely upon release of pressure;

said piston rod having an actuating bar fixed thereon;

said side walls having opposed straight longitudinal slots in which the ends of said actuating bar are slidably retained;



a bumper secured between said side walls, said hinge block having a stop face for engagement with the bumper in the extended position of the landing gear leg;

said hinge block having a first locking face positioned to be engaged by said actuating bar in the extended position of the landing gear leg, with the hinge block held between the actuating bar and the bumper;

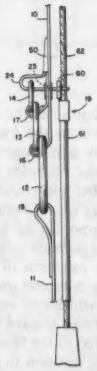
said hinge block having a second locking face perpendicular to the first and positioned to be engaged by said actuating bar in the retracted position of the landing gear leg.

4,337,913

MEANS FOR RELEASABLY ATTACHING STRANDS

William R. Booth, 2500 N. Woodland, Deland, Fla. 32720

Continuation of Ser. No. 895,409, Apr. 11, 1978, abandoned.
This application Dec. 4, 1979, Ser. No. 99,966
Int. Cl.³ B64D *17/38*
U.S. Cl. 244—151 B **6 Claims**



1. An apparatus for releasably attaching risers of a parachute from a harness of the parachutist and adapted to permit release of the parachute while said parachutist is in mid-air comprising

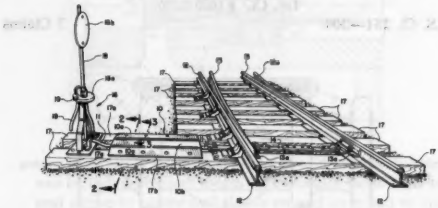
a ring member attached to the harness of the parachutist; and

a series of loops, each directly attached to a respective set of said risers, a first loop in the series being insertable through said ring member on said harness, and each additional loop being insertable through the preceeding loop in the series; and

a flexible thong turned around the last loop in said series and through a rip cord assembly with a rip cord inserted into an

aperture in said thong for releasably securing the last loop in said series and maintaining said loops in contact one with the other when in a secure position.

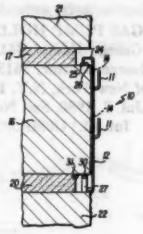
4,337,914
RAILWAY SWITCH STAND COVER
Brett Rich, Malad City, Id., assignor to Oneida General Corp., Malad City, Id.
Filed May 23, 1980, Ser. No. 152,627
Int. Cl.[3] B61L *5/02*; E01B *7/20, 15/00*
U.S. Cl. 246—428 7 Claims



1. A railroad head block switching installation protected for the safety of foot traffic alongside a railroad track with which said installation is connected, comprising, in combination, switching rails mounted on railroad ties, two mutually adjacent ties of which are special and extend outwardly beyond the others at one side of the rails to accomodate switching apparatus made up of a rail switching bar disposed between said special ties, a switching stand mounted on said special ties remote from said rails and including mechanism for actuating said switching bar, and a connecting rod extending between said special ties and joining said mechanism with said bar for actuating the latter; a weight supporting safety cover for said connecting rod and the space between said special ties, said cover being molded to shape as an integral unit from a structural plastic material and being of elongate plate formation having opposing ramp sections of substantially equal extent and slope leading to a central section in common which overlies and is spaced above said connecting rod, said ramp sections covering the major portions of the widths of respective ones of said special ties, said safety cover being provided with reinforcing ribs on its underside, including longitudinal ribs extending along the longitudinal margins of said cover and transverse ribs extending at intervals transversely of the ramp sections and of the center section and intersecting the longitudinal ribs, there being bosses formed at the respective rib intersections, and the end portions of the transverse ribs tapering from the bosses to the level of the undersides of the longitudinal edges of the cover; and lag screws extending through said bosses and screwed into said special ties for securing the cover in place.

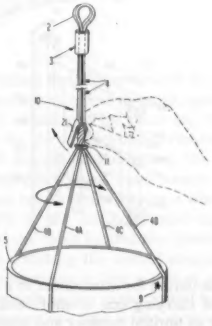
4. A weight-supporting safety cover for the connecting rod of a railroad head block switching installation, comprising structural plastic material of elongate plate formation having opposing ramp sections of substantially equal extent and slope extending along and transversely of the length of the cover and leading to a central section in common adapted to overlie and be spaced above the connecting rod of a railroad head block switching installation, said ramp sections being adapted to cover the major portions of the widths of tie sidewise extensions of the railroad track of said installation between which the connecting rod extends, said safety cover being provided with reinforcing ribs on its underside, including longitudinal ribs extending along the longitudinal margins of said cover and transverse ribs extending at intervals transversely of the ramp sections and of the center section and intersecting the longitudinal ribs, there being bosses formed at the respective rib intersections and the end portions of the transverse ribs tapering from the bosses to the level of the undersides of the longitudinal edges of the cover.

4,337,915
BRICK CLIP-ON HANGER
William V. Cali, Rte. #2, Box 122, Chapin, S.C. 29036
Filed May 29, 1980, Ser. No. 154,434
Int. Cl.[3] A47G *1/24*
U.S. Cl. 248—489 12 Claims



1. A fastening device to be mounted on a brick wall for supporting articles and the like therefrom, the device comprising a unitary resilient member which includes: a central generally coplanar part having one side adapted to bear against and overlap one side of a brick, and an opposite side having supporting means; an upper bent part which extends in a direction away from said opposite side through an angle, as seen in side view, of at least 135° relative to said coplanar part and which has a plurality of penetrating means extending therefrom at said angle which are adapted to engage the top edge of a brick for retaining the device in place on the brick; and a lower spring part extending inwardly relative to said coplanar part on the same side of said coplanar part as said upper part and which is spaced below said upper part a distance slightly less than the thickness of the brick to which the device is to be mounted, said spring part comprising flexible stress means with outwardly extending portions movable independently of each other that can be fitted to bear against the lower edge of said brick whereby it resiliently urges said penetrating means downwardly into firm engagement with the top of the brick.

4,337,916
ADJUSTABLY ORIENTABLE PLANT HANGER
Theodore C. Norris, 70 Sproul Rd., Malvern, Pa. 19355
Filed Oct. 16, 1980, Ser. No. 197,647
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—558 14 Claims



1. Suspension means for hanging a potted plant container or the like from a fixed point of support for adjustable orientation about the vertical, comprising strand or similar funicular means for attachment to such point of support so as to hang down and supportably engage such potted plant container, plus cooperating orientation adjustment means strung onto the

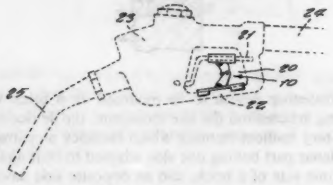
funicular means intermediate the point of support and the container and comprising a plurality of mutually engageable and disengageable pieces capable of being reoriented about the vertical relative to one another only when disengaged and capable of being engaged in at least several orientations about the vertical.

4,337,917

GAS PUMP HOLDER

Gerald Tesack, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jul. 7, 1980, Se . No. 166,036
Int. Cl.[3] G05G 5/06
U.S. Cl. 251—90 3 Claims



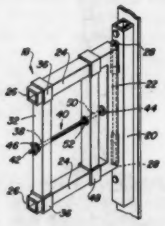
1. A gas pump holder, comprising in combination, a device insertable between a pivotable handle and a stationary guard of a fuel pump nozzle base, said holder including a foot at one end for resting against said guard, and a channel-shaped plate at its other end for supporting said handle, and an adjustable pivot means between said foot and plate, whereby said means is pivotable from a position maintaining said handle in operation to a closed position permitting said handle to remain in inoperative position wherein said pivot means comprises a pair of levers pivotally attached together, and pivotally attached to said foot and said plate, including a stop on one of said levers adapted to engage the other of said levers to maintain a fixed position of said levers corresponding to the first said position.

4,337,918

BRACKET STRUCTURE, ESPECIALLY FOR CARRYING CORRAL SECTIONS ON A VEHICLE OR THE LIKE

James E. Gregory, R.R. #1, Box 130, Fort Madison, Iowa 52627

Filed May 30, 1980, Ser. No. 154,715
Int. Cl.[3] F16M 11/00
U.S. Cl. 248—201 11 Claims



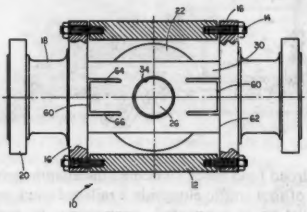
1. Bracket structure for attachment to a wall or the like for the purpose of carrying one or more articles, comprising: a carrier having an upright member and upper and lower generally horizontal legs spaced vertically apart and rigidly joined to the upright member and projecting outwardly therefrom in the same direction, each leg having a free, outer terminal end; means on the carrier for the mounting thereof on such wall or the like; an upright outer clamp element having opposite upper and lower end portions substantially in alinement respectively with the legs, each end portion including slide means receivable of the associated leg for selectively mounting the clamp element on and for dismounting the clamp element from the legs and also for selective positioning of the clamp element on the legs relative to the upright member; and means cooperative between the carrier and the clamp element for securing the clamp element in a selected position.

4,337,919

BEARING RETAINERS FOR A ROTARY VALVE

Roger L. Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Jun. 22, 1981, Ser. No. 275,496
Int. Cl.[3] F16K 5/06
U.S. Cl. 251—304 7 Claims



1. A rotary valve comprising:
a valve body;
a rotatable valve closure member in said valve body; an actuator stem for said closure member;
a pair of trunnions on said closure member; one trunnion removably attached to said stem for rotation therewith and the other trunnion located on the opposite side of said closure member from said one trunnion and axially aligned with said one trunnion;
a bearing block for each trunnion with a bore therethrough rotatably carrying a respective trunnion;
said bearing blocks located within said valve body;
means on said valve body clamping said trunnions to hold them in place therein;
each said bearing block being characterized that it comprises;
a pair of opposite substantially parallel surfaces to be clamped by complementary surfaces on said body;
two pairs of parallel slots in said bearing block intermediate said bore and each of said opposite surfaces and substantially perpendicular to said surfaces;
said slots being disposed so that projected continuations of each pair thereof are approximately tangential to said bore on opposite sides thereof; and
means directing clamping forces from said body so that greater forces are applied to the portion of said opposite surfaces outside of each pair of slots than to the portion between each said pair of slots.

4,337,920

VALVE

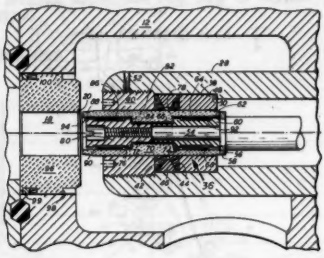
Joe P. Parris, Magnolia, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Oct. 16, 1980, Ser. No. 197,409
Int. Cl.[3] F16K 1/00
U.S. Cl. 251—357 14 Claims

1. A valve for high temperature abrasive service comprising
a valve body having an inlet, an outlet and a valve chamber therebetween with a valve seat in said chamber around said outlet,
a metal valve stem movable toward an away from said valve seat,
a valve member mounted on said valve stem and adapted

with the movement of said valve stem to control flow through said valve seat,

said valve member having a sleeve of abrasion resistant material surrounding said metal valve stem, and



means to securely attach said sleeve to said metal valve stem and including resilient means between said metal stem and said sleeve to center said sleeve on said stem and to insulate said sleeve from tension loading resulting from differential expansion when exposed to elevated temperature.

4,337,921

INFLATABLE RAM

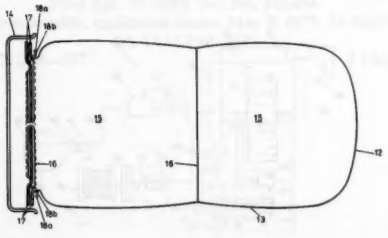
Thomas P. Edwards, Fareham, England, assignor to FPT Industries, Portsmouth, England

Filed Jul. 22, 1980, Ser. No. 171,089

Claims priority, application United Kingdom, Jul. 30, 1979, 7926502

Int. Cl.³ B66F *3/24*

U.S. Cl. 254—93 HP **8 Claims**



1. An inflatable ram having an extensible wall of flexible sheet material connecting two opposed end faces to enclose a space and permit the distance between the end faces to vary, the extensible wall being adapted to collapse in a plurality of folds laid one upon another when the ram is retracted, a plurality of diaphragms attached to and extending transversely of the extensible wall to divide the enclosed space into a series of interconnected compartments, and means tending to restrain each compartment against inflation comprising means adapted for cooperation with each fold to tend to restrain that part of the extensible wall within the fold against extension and whereby restraining forces applied to successive folds progressively increase from one end of the ram to the other so that in operation the ram extends by sequential inflation of the compartments from one end of the ram to the other as the restraining forces applied to the folds are progressively overcome by inflation pressure.

4,337,922

APPARATUS FOR LAYING AND SECURING HEAVY ELECTRICAL CABLES

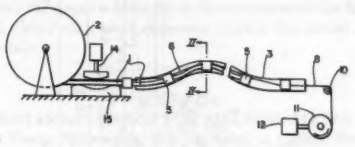
Mathias Streiff, Schwanden, and Peter Schnyder, Netstal, both of Switzerland, assignors to Mathias Streiff AG, Schwanden, Switzerland

Filed Mar. 25, 1980, Ser. No. 133,866

Claims priority, application Switzerland, Mar. 27, 1979, 2821/79

Int. Cl.³ B65H *59/00*

U.S. Cl. 254—134.3 FT **6 Claims**



1. Apparatus for laying and securing heavy electric cable in a cable duct, comprising at least one cable holder fastened with positive force engagement to the cable, said cable holder being connected with at least one draw and tensioning wire for pulling into and securing the cable in the cable duct, the cross section of the cable holder corresponding approximately to the cross section of the cable duct, said cable holder comprising fastening means for fastening the cable, a casing that surrounds the said cable and fastening means, and at least two radially disposed cross pieces that extend between and are connected with said fastening means and said casing, and wherein said at least one draw and tensioning wire is fixed to one of said cross pieces.

4,337,923

FIBRE OPTICAL CABLE PULLING EYE

Jackson A. Smith, Box 1058, Aldergrove, B.C., Canada (U0X-1A0)

Filed Sep. 23, 1980, Ser. No. 190,016

Int. Cl.³ B65H *59/00*

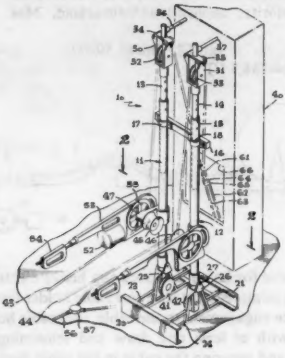
U.S. Cl. 254—134.3 FT **1 Claim**

1. A device for pulling fibre optic cable of the type having a central strength member, comprising an elongated body having a tubular sleeve at one end for receiving one end of the cable and adapted for circumferentially crimping around the cable at a series of spaced locations along the length of the sleeve; and an integrally formed head portion in alignment with the sleeve, said head portion having a central bore substantially the length of the head for receiving the central strength member of the cable beyond the terminal end of the cable, and means for locking the central strength member to the head portion, comprising at least a pair of spaced locking screws positioned at right angles to the central bore and engaging the strength member to crimp it into sockets aligned with the ends of the locking screws; a pressurization valve in the head portion for pressurizing the connection between the cable and the pulling device; and a pulling eye at the terminal end of the head portion beyond the locking means; the crimping of the tubular sleeve around the cable serving to transmit pull to to the cable from the pulling eye in combination with direct pull applied to the central strength.

4,337,924
POWER PULLING ARRANGEMENT

George B. Gebo, 14738 Keswick St., Van Nuys, Calif. 91405

Filed Jun. 15, 1981, Ser. No. 273,593
Int. Cl.[3] E21C 29/16
U.S. Cl. 254—134.3 R 6 Claims



1. In a power driven wire or cable pulling device, the combination which comprises:

a load bearing member having a pair of substantially parallel, spaced apart, extendable stanchions;

a support base pivotally attached to said stanchions at a selected end thereof;

a cross brace having its opposite ends secured to each of said stanchions respectively located in close proximity to the end of said stanchions opposite to the end attached to said support base;

a pair of cooperating capstons operably carried on said stanchions respectively mid-way between said cross brace and said support base;

upper and lower pulleys carried on opposite ends of each of said stanchions respectively;

a pair of pull ropes trained over selective ones of said pulleys associated with each of said pair of stanchions and further, trained over each of said capstons respectively;

power means operably coupled to each of said capstons for driving said capston at a predetermined and selected speed; and

a fitting common to said pair of pull ropes at adjacent ends thereof for jointly applying the combined loads of said pull ropes to a wire or cable bundle intended to be pulled.

4,337,925
HITCH AND SNATCH BOOM ASSEMBLY

Jefferson C. Shannon, P.O. Box 808, Yazoo City, Miss. 39194

Filed Nov. 24, 1980, Ser. No. 209,486
Int. Cl.[3] B60P 3/28; B66D 3/18
U.S. Cl. 254—264 9 Claims

1. A hitch and snatch boom comprising:

(a) a support means,

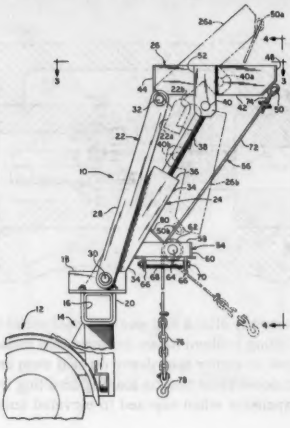
(b) a first, upwardly disposed arm means including upper and lower ends, the lower end being attached to the support means,

(c) a second upwardly disposed arm means including upper and lower ends, the lower end being attached to the support means,

(d) one of said arm means being extensible,

(e) boom means including inner and outer ends and an intermediate connection point disposed between said ends, said boom means being pivotally connected at its intermediate connection point to the upper end of one of said arm means and pivotally connected to the upper end of the other of said arm means inwardly of said intermediate connection point,

(f) guide roller means mounted to one of said means, and

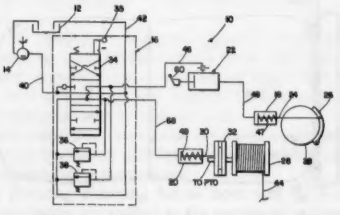


(g) a cable connected to the boom means outwardly of the intermediate connection point and received by the roller means, said cable having a connection means at the remote end having downward and outward movement capability relative to the roller means.

4,337,926
WINCH CONTROL

Peter H. Dehaan, Ayr, Canada, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 2, 1980, Ser. No. 182,877
Int. Cl.[3] B66D 1/14
U.S. Cl. 254—365 4 Claims



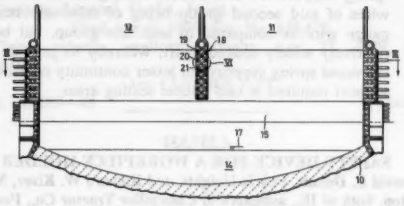
1. In a winch comprising a drum; a brake normally engaged with said drum; power input means for rotating said drum in a first direction; clutch means operable to selectively engage said power input means with said drum; and means for controlling said winch comprising a pump, a first actuating clyinder connected to the outlet of said pump and operable to engage said clutch means, a second actuating cylinder connected to the outlet of said pump and operable to selectively disengage said brake, and valve means connected between said pump and said first and second actuating cylinders having a first position connecting the outlet of said pump to said first actuating cylinder and a second position connecting the outlet of said pump to said second actuating cylinder; the improvement including a manually actuated master cylinder assembly connected in series between said valve means and said second actuating cylinder and operable to selectively pressurize said second actuating cylinder independent of said pump.

4,337,927

FURNACE INSTALLATION PARTICULARLY FOR THE MELTING OF ORE CONCENTRATE

Friedrich Megerle, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,740
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935394
Int. Cl.³ F27D 1/12
U.S. Cl. 266—190 5 Claims



1. In a furnace of the type used for melting of ore concentrate, including exterior side walls and at least one separating wall positioned intermediate said side walls and arranged to dip into the melt to divide the furnace space into separate melting, settling and exhaust spaces, the improvement which comprises:

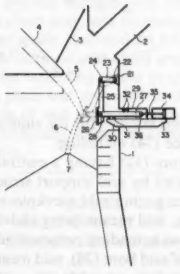
said separating wall being composed of individual metallic cooling elements in a stacked arrangement, each of said cooling elements being T-shaped, said cooling elements being arranged in super-imposed relation, and each cooling element being provided with means for passing a coolant therethrough.

4,337,928

APPARATUS FOR CHANGING THE CHARGE DISTRIBUTION IN A BLAST FURNACE

Kyoichi Ando, Kitakyushu, Japan, assignor to Nippon Steel Corporation, Tokyo and Nittetsu Plant Designing Corporation, Kitakyushu, both of, Japan

Filed Apr. 25, 1980, Ser. No. 145,456
Claims priority, application Japan, May 2, 1979, 54-58227
Int. Cl.³ C21B 7/00
U.S. Cl. 266—197 4 Claims



1. An apparatus for changing the charge distribution in a blast furnace, comprising:

a plurality of arms disposed in a circle within the top of the furnace and extending generally vertically;

a plate mounted on the bottom of each arm facing toward the center of the furnace in the path of the trajectory of the charge flowing into the furnace for being struck by the charge and deflected into the lower portion of the furnace;

push rod means to which the lower end of each said arm is pivotally connected, each said push rod means being movable for moving the lower end of the corresponding arm toward and away from the center of the furnace along a substantially horizontal line;

drive means connected to each said push rod means for moving said push rod means toward and away from the center of the furnace; and

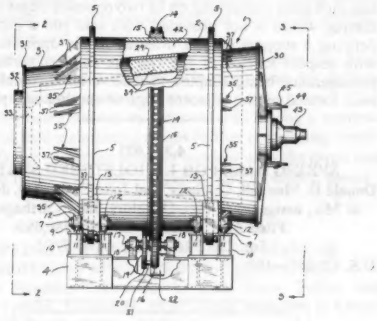
means mounting the upper end of each arm for swinging movement downwardly along an arc away from the center of the furnace and slightly outwardly toward the periphery of the furnace by the movement of the lower end of each said arm toward the center of the furnace by said push rod means, whereby the plate is tilted so as to move the upper edge away from the center of the furnace the closer each plate is moved toward the center of the furnace.

4,337,929

ROTARY FURNACE FOR MELTING METAL

Marvin Evans, Milwaukee, Wis., assignor to College Research Corporation, Germantown, Wis.

Filed Dec. 18, 1980, Ser. No. 217,769
Int. Cl.³ F27B 7/26
U.S. Cl. 266—248 10 Claims



1. A rotary batch-type furnace for melting and recovering metal, comprising an outer cylindrical drum having open ends, guide means for supporting the drum for rotation about its axis, drive means for rotating the drum, a closed kiln disposed within the drum, said kiln being tapered in a longitudinal direction and having a small diameter end and a large diameter end, said kiln having a discharge opening adjacent said large diameter end for removing molten material from the kiln, heating means associated with the kiln for heating materials therein, and connecting means for mounting the kiln in spaced relation within the drum to provide an annular space therebetween.

4,337,930

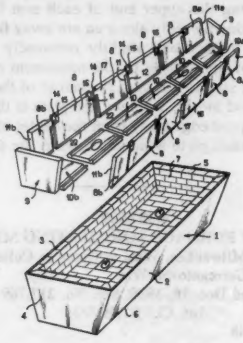
HEAT INSULATING LINING FOR A METALLURGICAL CONTAINER

Jean-Charles Daussan; Gerard Daussan, both of Metz, and Andre Daussan, Longeville les Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Filed Oct. 16, 1980, Ser. No. 197,533
Claims priority, application France, Oct. 23, 1979, 79 26227
Int. Cl.³ C21C 7/00
U.S. Cl. 266—283 6 Claims

1. Lining for a metallurgical container, comprising a series of removable plates of heat insulating material adapted to be applied to the inside of the metallurgical container against the lateral walls and the bottom of the latter, at least a part of these plates being quadrangular and identical, the guadrangular and identical plates adapted to be applied against the lateral walls of the container comprising on their two opposite edges a rib extending over a length greater than the height of the level of

liquid metal which has to be introduced into the container, this rib defining a support surface adapted to receive an identical rib formed along the adjacent edge of another said plate, the support surfaces defined by the two ribs formed on the opposite edges of a said plate being oriented in the same direction,



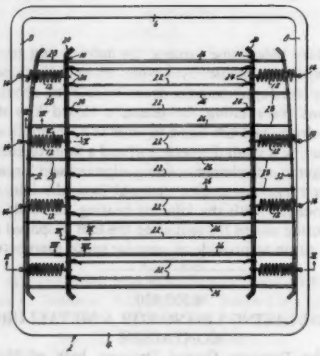
and each plate comprising on its two opposite edges on the part thereof which is not provided with said rib, a protuberance defining a support surface oriented in the opposite direction with respect to that of the rib, the support surface of this protuberance being adapted to receive an identical protuberance formed on the adjacent edge of another said plate.

4,337,931

SPRING BASE FOR UPHOLSTERED SEATING

Donald D. Mundell, Carthage, and John P. Gowing, Joplin, both of Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.

Filed Aug. 25, 1980, Ser. No. 180,593
Int. Cl.³ F16F *3/02*; A47C *7/02*
U.S. Cl. 267—102 **10 Claims**



1. A spring base for the bottoms of upholstered seats of the type consisting generally of a generally level main seating area and upwardly and outwardly inclined bolster seating areas at the sides of said main seating area, and also suitable for use in the backs of said seats, said spring base comprising:

a. a pair of bolster strands each including a spring wire and extending forwardly and rearwardly of said seat respectively at opposite sides of said main seating area,

b. a series of tension support springs connected at their inner ends to each of said bolster strands in spaced relation along said strand, and extending outwardly therefrom for connection at their outer ends to a rigid seat frame, and

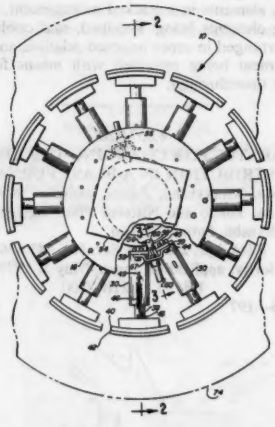
c. a series of spring steel cross wires extending transversely between said bolster strands to define said main seating area, a first group of said cross wires, spaced generally regularly along said bolster strands, being of relatively light-gauge wire, terminating and being affixed at their ends to said bolster wires, and being relatively closely spaced to supply an increased continuity of support for padding layers applied thereover, and a second group of said cross wires, also spaced generally regularly along said bolster strands, being connected to said bolster strands but extending outwardly therefrom in upwardly inclined relation to said main seating area to provide cantilever spring support for said bolster seating areas, the cross wires of said second group being of relatively heavy-gauge wire as compared to said first group, but being relatively widely spaced apart, whereby to provide the increased spring support but lesser continuity of padding support required in said bolster seating areas.

4,337,932

SAFETY DEVICE FOR A WORKPIECE HOLDER

Ronald E. Dennis, Peoria Heights, and Richard W. Kizer, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00807, § 371 Date Jun. 25, 1980, § 102(e) Date Jun. 25, 1980, PCT Pub. No. WO82/00017, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 25, 1980, Ser. No. 245,221
Int. Cl.³ B23Q *3/14*
U.S. Cl. 269—23 **13 Claims**



1. In a workpiece holder (10) for supporting the inner surface of a workpiece (74) including:

a support structure (12) having a central bore (28);

spokes (30) carried by said support structure (12),

means (38) for engaging said workpiece and for projecting into said bore, said means being slidably attached to said spokes (30) and extending perpendicular to the longitudinal axis (23) of said bore (28), said means (38) having distal ends (40) engaging said workpiece and proximal ends (44) projectable into said bore (28);

a cam (48) located within said bore (28) having a sloped cam surface (50) engaging said proximal ends (44) and movable between a first position at which said proximal ends project into said bore (28) thereby retracting said means (38) on said spokes (30) and a second position wherein said cam surface (50) moves said proximal ends (44) outwardly thereby extending said means (38) on said spokes (30) into engagement with said workpiece (10), the improvement comprising:

latch means (56) for preventing said cam (48) from moving

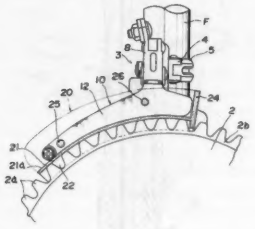
from said second position toward said first position, said latch means (56) includes means (64) for moving said latch means (56) from an inoperative position to an operative position in engagement with said cam (48) for holding said cam (48) in said second position.

4,337,933

JIG FOR MOUNTING A FRONT DERAILLEUR IN A BICYCLE

Tetsufumi Egami, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 9, 1980, Ser. No. 138,670
Claims priority, application Japan, Apr. 25, 2979, 54-56351[U]
Int. Cl.³ B25B 1/20
U.S. Cl. 269—40 2 Claims



1. A jig for mounting a front derailleur having a pair of guide plates on a frame of a bicycle in a proper position in correspondence with a plurality of front chain gears of different diameters, said jig comprising,

a main body adapted to be positioned opposite to at least one of said guide plates for setting said one guide plate in a predetermined position relative to said chain gears and comprising: a plate having a length which extends the length of said one guide plate, a receiving plate which projects substantially perpendicularly from a lower portion of said main body and has a receiving face of circular arc conforming to the lower end face of said one guide plate, an engaging portion positioned at a lower portion of said receiving plate and shaped to engage with the outer peripheral portion of one of said chain gears, so that when said engaging portion engages with the outer peripheral portion of said chain gear, said receiving face is adapted to receive said one guide plate and set it in a proper position with respect to teeth on said chain gear, and at least two adjustment bolts extending in the projecting direction of said receiving plate and provided in the vicinity of both lengthwise ends of said main body, the extension of said bolts in the projecting direction of said receiving plate being adjustable.

4,337,934

ASSEMBLY POST

Jack E. Caveney, Hinsdale, Ill., assignor to Panduit Corp., Tinley Park, Ill.

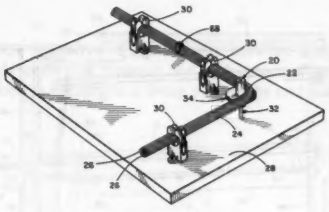
Filed Oct. 20, 1980, Ser. No. 198,406
Int. Cl.³ B23Q 1/04
U.S. Cl. 269—77 14 Claims

1. An assembly post for holding a portion of elongate objects, such as wires to be formed into a bundle, elevated with respect to a wiring layout board used in the formation of said bundle and for defining a turn in one or more of said objects, said assembly post comprising:

means for mounting said assembly post on said layout board;

holding means supported by said mounting means for holding said portion of said elongate objects, said holding means being movable between an extended position wherein it supports said objects as they are formed into a bundle and a retracted position wherein said holding means is closer to said layout board than in its extended position; and

means for maintaining said holding means in its extended position during wiring of said bundle against a predetermined force greater than the weight of said portion of elongate objects whereby, after layout of the bundle, application of a force greater than said predetermined force causes movement of said holding means to its retracted position and permits application of a tying device and removal of said bundle without substantial interference from said assembly post,



said maintaining means comprises a collet extending from said holding means, said collet having a bore for slidably receiving said mounting means,

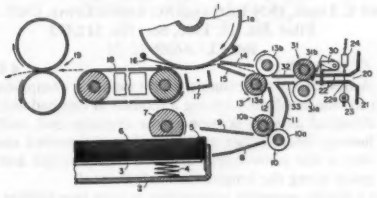
said collet being formed by a curved wall having a window therein, said maintaining means further comprising a resilient finger extending into the window with the distal end of the finger frictionally engaging said mounting means.

4,337,935

COPYING APPARATUS HAVING A MANUAL INSERTION PAPER FEEDING MECHANISM

Takamasa Sawada, Yokohama; Yoshiaki Sone, Tokyo, and Kanou Tanaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,691
Claims priority, application Japan, May 24, 1979, 54-63240
Int. Cl.³ B65H 7/02
U.S. Cl. 271—9 5 Claims



1. A copying apparatus having a manual insertion paper feeding mechanism comprising:

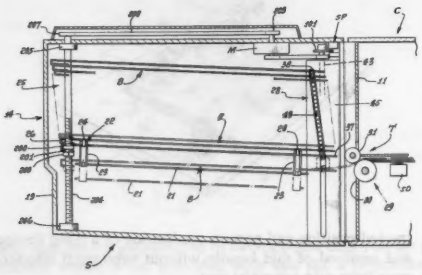
a manual insertion portion discrete from an insertion portion through which normally used paper may be inserted for conveyance thereof;

register means for once stopping paper inserted through said manual insertion portion and for thereafter conveying said paper at an adjusted timing; and

slip feed means provided between said manual insertion portion and said register means for effecting forward feeding of the paper inserted through said manual insertion portion and for allowing the respective transverse edges of said paper to slip while maintaining the forward feeding condition when the forward movement of said

paper aligned with such respective transverse edges is stopped by stoppage of said register means.

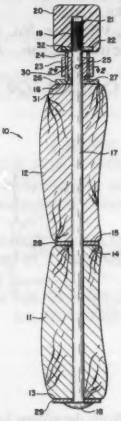
4,337,936
COMPACT SORTER
Frederick J. Lawrence, Tustin, Calif., assignor to Gradco/Dendoki, Inc., Santa Ana, Calif.
Filed May 7, 1980, Ser. No. 147,357
Int. Cl.³ B65H *29/58*
U.S. Cl. 271—293 **13 Claims**



1. An improved sorting apparatus of the shiftable bin type including a frame structure having means for mounting the sorting apparatus on a copying machine at the sheet outlet from the copying machine, sorting bins shiftable relative to one another to provide a wide sheet entry between bins at said outlet, and means for shifting the bins, said bins having ends remote from said outlet pivotally arranged and ends adjacent said outlet mounted for shifting movement past said outlet, said means for shifting said bins engaging successive bins at said ends adjacent to said outlet to move the latter successively from one side of said outlet to the other, said means for shifting said bins also including means for shifting said remote ends uniformly in the direction of movement of said ends adjacent to said outlet, and including control means to intermittently effect operation of said shifting means in opposite directions following passage into successive bins from the copying machine of a selected number of sheets.

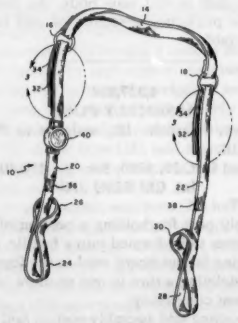
4,337,937
ARM MUSCLE EXERCISER DEVICE
Rafael E. Lopez, 1924 Fairhaven St., Lemon Grove, Calif. 92045
Filed Jan. 16, 1980, Ser. No. 112,473
Int. Cl.³ A63B *21/22*
U.S. Cl. 272—67 **4 Claims**

1. A device for exercising the arm muscles, comprising:
(a) an elongated shaft having a retainer at one end and being threaded along a portion of the opposite end, said shaft having, intermediate said retainer and threaded end portion, a slot transversely disposed therethrough and elongated along the longitudinal axis thereof;
(b) a handle assembly comprising at least two tubular members surmounted upon said shaft and each adapted for relative rotating movement thereabout, the longitudinal dimension of said handle assembly as mounted on said shaft being less than the distance between said retainer and said slot;
(c) an adjustable housing member having a threaded recess comfortably accommodating said threaded end portion;
(d) friction-producing means responsive to adjustment of said housing member for urging said tubular members of said handle assembly into friction-producing abutment, said means comprising a sleeve member surmounted upon said shaft intermediate said handle assembly and housing member, the surface portion of said sleeve member proximate said handle assembly having a transverse cross-section which is non-circular, said sleeve member having a bore transversely disposed therethrough which is coaxially aligned with said slot through said shaft, said bore further having a crosssectional dimension along the longitudinal axis of said shaft which is less than the elongated dimension of said slot, and a pin member secured within said bore and communicating through said slot which permits said sleeve to move relative to said shaft only along the longitudinal axis of the latter thereby preventing said adjustable housing member from rotating about said threaded end portion in response to rotation of said tubu-



lar members about said shaft so as to prevent the disengagement of said tubular members from said friction-producing abutment; and
(e) a friction-producing plate member surmounted upon said shaft intermediate said handle assembly and said sleeve member, said plate member having a recess extending inwardly therein which is adapted to conformably accommodate said non-circular portion of said sleeve member whereby to prevent relative rotating movement therebetween.

4,337,938
JOGGER'S AID
Basilides Rodriguez, 33 Berkley Rd., Mantua, N.J. 08051
Filed Mar. 6, 1981, Ser. No. 241,151
Int. Cl.³ A63B *23/00, 69/00*
U.S. Cl. 272—93 **8 Claims**



1. A device for increasing the endurance of a runner by supporting the weight of his arms comprising:
an elongated strap, said strap being of a length so as to

extend approximately from a runner's waist, up one side of his chest, around the back of his neck and down the other side of his chest to his waist again, and

upper and lower loops formed at each free end of said strap, each of said lower loops being large enough to encircle and support the four fingers of one of the runner's hands, each of said upper loops being of sufficient size and being located relative to the lower loop to encircle and support the thumb of the hand being supported in the respective lower loop.

4,337,939

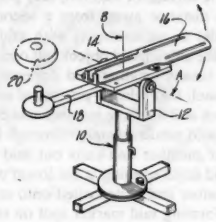
ANKLE EXERCISE DEVICE

David C. Hoyle, 5933 Little Pine La., and Sue Kandarian, 170 Cedarwald Ct., both of Rochester, Mich. 48063

Filed Feb. 20, 1980, Ser. No. 122,973

Int. Cl.³ A01B *23/04*

U.S. Cl. 272—96 **5 Claims**



1. In an ankle exercising apparatus of the type having a stand, a pivot plate pivotably connected to the stand for rotation about a horizontal axis, and a rotation resisting means attached to the pivot plate, the improvement comprising:

a foot receiving means pivotably mounted on the plate for selective rotation about a vertical axis between at least a first position relative to the rotation resisting means in which the ankle is exercised about one axis of possible ankle movement and a second position approximately at right angles to the first position relative to the rotation resisting means in which the ankle is exercised about another axis of possible ankle movement;

means for locking the foot receiving means at each of said first and second positions relative to the pivot plate for use in the selected position;

said rotation resisting means comprising a weight arm having a vertical pin stationed thereon and extending upwardly therefrom in spaced relation to the pivot plate for receiving angular weights thereon;

and means for adjusting the distance between the pivot plate and the vertical pin.

4,337,940

JAVELIN

Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14526

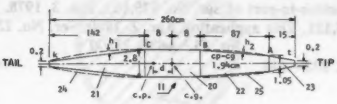
Continuation-in-part of Ser. No. 199,941, Oct. 23, 1980, abandoned, Continuation-in-part of Ser. No. 760,163, Jan. 17, 1977, abandoned, Continuation-in-part of Ser. No. 655,462, Feb. 5, 1976, abandoned, Continuation-in-part of Ser. No. 529,792, Dec. 5, 1974, abandoned. This application Nov. 17, 1980, Ser. No. 207,448

Int. Cl.³ A63B *65/00*

U.S. Cl. 272—106 **5 Claims**

1. A javelin meeting athletic competition rules as to total weight, minimum and maximum dimensions, general shape, and head size and weight, and with a forward direction proceeding toward a forward tip end of said javelin and an aft direction proceeding toward an aft tail end, said javelin having a center of gravity located substantially forward of its longitudinal center, and comprising:

a. said javelin having a surface shape and finish relative to its weight distribution effectively locating the aerodynamic center of pressure forward of said longitudinal center and within 0–5 cm aft of said center of gravity at an angle of attack of relative wind of 90° to the axis of said javelin; and



b. indicia indicative of said distance between said aerodynamic center of pressure and said center of gravity as defined in paragraph a. being marked on said javelin.

4,337,941

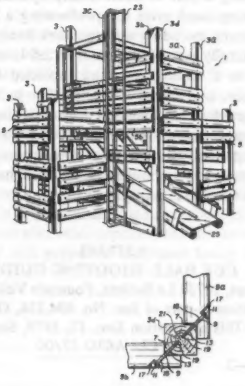
BUILDING STRUCTURE

Zoltan Kitka, Surrey, Canada, assignor to Interplay Design Limited, White Rock, Canada

Filed May 22, 1980, Ser. No. 152,342

Int. Cl.³ A63B *9/00*

U.S. Cl. 272—113 **11 Claims**



1. A building structure comprising: upright members;

mutually perpendicular horizontal members having notches at adjacent ends shaped to receive one said upright member, each notch convering a minor portion of the surface of said upright member so that each horizontal member does not contact a mutually perpendicular horizontal member; and

connecting means for connecting each said horizontal member to said one upright member, the connecting means comprising an elongate fastener extending from said each horizontal member into the one upright member in the direction of the perpendicular horizontal members and towards the center of the one upright member, the fastener being at an angle of substantially 45° with said each horizontal member.

4,337,942

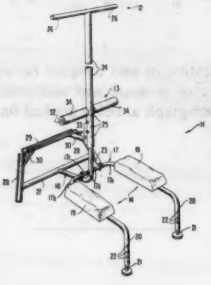
PORTABLE EXERCISING DEVICE USABLE ALONE OR WITH OTHER DEVICES FOR MULTIPLE ROUTINES

Bruce C. Sidlinger; Joanne Sidlinger, both of 2810 Country Club Rd., Garland, Tex. 75042, and Bruce D. Sidlinger, 7626 Callaghan Rd., Apt. 3006, San Antonio, Tex. 78229

Continuation-in-part of Ser. No. 875,102, Feb. 3, 1978, Pat. No. 4,225,131. This application Apr. 2, 1980, Ser. No. 136,431

Int. Cl.[3] A63B *23/00*

U.S. Cl. 272—144 4 Claims



1. A portable exercise device for performing a variety of exercise routines such as shoulder stands, when used alone, and rebounding, running in place or sit-ups when used in combination with another separate free-standing exercise device having a generally horizontal user supporting surface, comprising frame means having a plurality of downwardly projecting horizontally spaced supports for contact with a horizontal surface and disposed to stabilize the frame means, said frame means including a pair of horizontally spaced shoulder pads and cooperating hand grips for performing a shoulder stand, said frame means including a framework having a supporting structure generally resembling an inverted U to be detachably connectable to a mating structure included in said another exercise device, said frame means further including crossbar means supported at an elevated location disposed medially above the space defined by contact with said downwardly projecting supports, said crossbar means comprising alternatively a leg rest for a shoulder stand and hand grips when performing a routine in an upright position.

4,337,943

CUE BALL SHOOTING GUIDE

Gilbert Stewart, 10732 La Batista, Fountain Valley, Calif. 92708

Continuation-in-part of Ser. No. 494,224, Oct. 6, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,360

Int. Cl.[3] A63D *15/00*

U.S. Cl. 273—2 2 Claims

1. A cue ball shooting guide for placing a marking spot on the felt surface of a pool table to indicate the line of travel over the felt surface that a cue ball must take to correctly strike an object ball to propel said object ball towards a pocket in said pool table which comprises:

a dispensing member including an essentially vertical hollow tubular member having open ends, the lower of said ends forming a small opening in the bottom of said tubular member;

said dispensing member including an abrasive member located in association with said hollow tubular member, said abrasive member including a surface capable of breaking a piece of chalk into chalk dust when said piece of chalk is moved over the surface of said abrasive member;

support means supporting said dispensing member above said felt surface;

locating means for locating said dispensing member in a position over a point on said felt surface where said marking spot is to be placed, said point lying on a first line which is directed toward the center of said pocket and includes on said first line the tangential point of the object ball with the surface of said felt, said point being one cue ball radius distance away from a second line which is perpendicular to an intersects with said first line and is tangent to the side of said object ball opposite said pocket;

said locating means locating said dispensing member over said point such that when a portion of said piece of chalk is abraded on said abrasive member said chalk dust formed passes into said tubular member through the upper ends of said tubular member and exits out said tubular member through said small opening at the lower of the ends of said tubular member and is deposited onto said felt surface at said point forming said marker spot on said felt surface at said point.

4,337,944

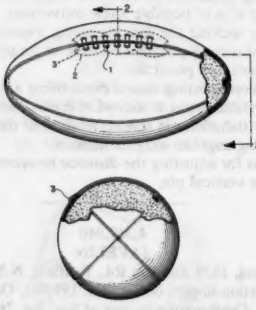
LIGHTER AND SOFTER RECREATIONAL BALLS

Chester F. Massino, Sandwich, Ill., assignor to Ideas That Sell, Inc., Sandwich, Ill.

Continuation-in-part of Ser. No. 29,316, Apr. 12, 1979, Pat. No. 4,241,918. This application Nov. 3, 1980, Ser. No. 203,136

Int. Cl.[3] A63B *41/08, 45/00, 37/02*

U.S. Cl. 273—65 A 7 Claims



1. A ball comprising:

(a) an interior portion comprised of waste acrylic yarn fill,

(b) a wool or felt batting interior cover comprised of four panels or sections,

(c) a polyester double-knit outer cover comprised of four panels or sections, each of which are substantially identically shaped and are secured to each other and to said corresponding interior wool or felt batting piece to form seams running the length of the ball,

said ball further characterized by an elevated or raised area along an intermediate portion of one of the seams to enable the ball to be thrown in a spiral, said ball having the general appearance, shape and characteris-

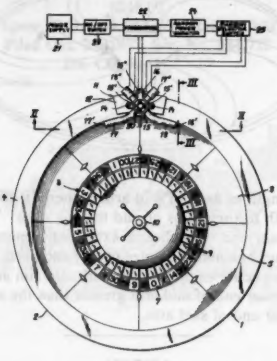
tics of a conventional football when thrown or kicked, but being softer and lighter.

4,337,945

ROULETTE GAMING APPARATUS

David Levy, 360 W. 55th St., New York, N.Y. 10019

Filed Mar. 20, 1980, Ser. No. 132,085
Int. Cl.³ A63F 5/04
U.S. Cl. 273—142 E 7 Claims



1. A gaming apparatus comprising:

a roulette wheel having a circular rim, a downwardly converging frustoconical bowl contained within said rim and joined thereto below the upper surface of said rim to form therewith a continuous circular track against said rim for a roulette ball, a rotatable wheel head centered within said bowl at the bottom thereof and formed with a plurality of numbered compartments for receiving said roulette ball; and

an automatic roulette ball spinner having at least one guide tube positioned along said rim for directing said ball onto said track, said guide tube having a roulette ball magazine communicating therewith, and means for propelling said ball through said guide tube onto and around said track and a movable member connected with said guide tube and rectilinearly shiftable vertically for lowering said guide tube into a first position wherein the tube rests in the track for discharging said ball onto said track and raising said guide tube into a second position wherein the tube is raised above the track for allowing said ball to travel around said track uninterruptedly over at least one full turn thereof, said member having a vertical guide.

4,337,946

GOLF BALL

Tasuku Saito, Tokorozawa; Tutomu Noma, Higashimurayama; Tsutomu Matsunaga, Iruma; Nagayoshi Naito, Nagoya; Chiaki Tanaka, Chita, and Motoki Hiratsuka, Nagoya, all of Japan, assignors to Toray Industries, Inc. and Bridgestone Tire Company Limited, both of Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,554
Claims priority, application Japan, Nov. 8, 1979, 54-144857
Int. Cl.³ A63B 37/06, 37/12
U.S. Cl. 273—225 7 Claims

1. A golf ball comprising a thread-wound central core, an outer cover for the core, said cover being formed of a polyester elastomer and a layer of thermoplastic resin disposed between said cover and said core, said layer having a substantial melt flow initiation temperature of 160° C. or less, said substantial melt flow initiation temperature being the minimum temperature at which the melt index under a load of 4350 g be-

comes 1 g/10 mins or more, and said layer having high adhesion to the polyester elastomer cover.

4,337,947

GOLF BALL

Tasuku Saito, Tokorozawa; Tutomu Noma, Higashimurayama; Tsutomu Matsunaga, Iruma; Chiaki Tanaka, Chita; Yoko Furuta, and Nagayoshi Naito, both of Nagoya, all of Japan, assignors to Bridgestone Tire Co., Ltd. and Toray Industries, Inc., both of Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,194
Claims priority, application Japan, Dec. 10, 1979, 54-159269
Int. Cl.³ A63B 37/12
U.S. Cl. 273—235 R 11 Claims

1. In a golf ball comprising a thread-wound central core and an outer cover for the core; the improvement wherein said outer cover is composed of a composition comprising (a) at least one ionomer which is a copolymer of 75 to 99.8 mole % of at least one α-olefin and 0.2 to 25 mole % of at least one α,β-unsaturated carboxylic acid to which copolymer at least one metal ion selected from the group consisting of monovalent, divalent and trivalent metal ions is added and (b) at least one polyester elastomer selected from the group consisting of a polyetherester block copolymer, polylactone-ester block copolymer, aliphatic or aromatic dicarboxylic acid copolyester and a mixture of aliphatic dicarboxylic acid copolyester and aromatic dicarboxylic acid copolyester, the content, in said composition, of said polyester elastomer being 3 to 50% by weight.

4,337,948

GAME APPARATUS

Jeffrey D. Breslow, Highland Park; Donald A. Rosenwinkel, Tinley Park, both of Ill.; Steven P. Hanson, Brea, Calif., and Rex M. Harper, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,824
Int. Cl.³ A63F 3/00, 9/00
U.S. Cl. 273—237 35 Claims

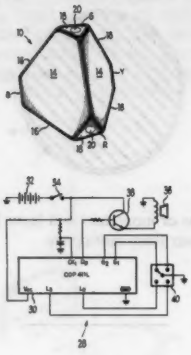
1. A game apparatus, comprising:

a game object having a housing with a finite number of sides;

means within said object for detecting rotation of the object between two of said sides;

storage means, electrically connected to said detecting

means, for recording a sequence of rotary movements of said object; and



means, electrically connected to said storage means for subsequently providing an indication of said sequence of movements.

4,337,949

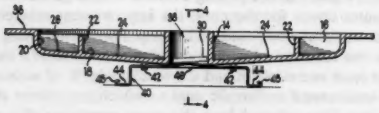
PLAYING PIECE PROPELLING GAME DEVICE

Michael J. Ferris, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 21, 1981, Ser. No. 226,910

Int. Cl.³ A63B *65/12, 67/06*

U.S. Cl. 273—324 **2 Claims**



1. A playing piece propelling game device comprising:

a plurality of disc-shaped playing pieces;

a generally circular, dish-shaped, open, playing surface having a plurality of distinct compartments defined on said surface by a plurality of radially arranged upstanding walls on the surface, said surface further including a generally horizontal peripheral flange;

an upstanding receptacle on said playing surface for receiving one of said playing pieces; and

a manually actuable propelling means aligned with said receptacle and attached to said playing surface for propelling one of said playing pieces from said receptacle onto said playing surface, said propelling means including a U-shaped leaf spring with a pair of spaced apart downwardly directed arms upon which said playing surface is supported, said propelling means arranged to propel one of said playing pieces upwardly in response to a downward actuation applied to said flange, the direction or propulsion of said playing piece determined by the manner of application of said force to said flange.

4,337,950

CIRCULAR BOOMERANG

Kenneth N. Gidge, 22 Hayden St., Nashua, N.H. 03060

Filed May 12, 1980, Ser. No. 148,663

Int. Cl.³ A63B *65/08*

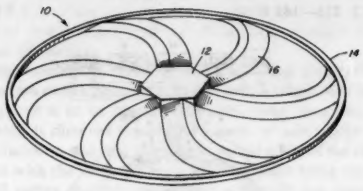
U.S. Cl. 273—426 **9 Claims**

1. A boomerang-action toy, comprising

(a) a central hub,

(b) an integral narrow outer annular rim spaced from and coplanar with said hub and coaxial therewith, said rim being of substantially uniform dimensions throughout,

(c) a plurality of matching integral angularly spaced arms each defining an airfoil in cross-section and extending spirally between said hub and said rim and coplanar therewith, the outer terminus of said arms being proximate to the outer periphery of said rim and each of said arms originating from said hub,



(d) the length of each of said arms generally corresponding in length to the radius of said toy,

(e) the inner end of each arm extending generally radially from said hub and the outer end of each arm joining said rim at an acute angle to form with said rim an arm width at the outer end of said arm greater than the arm width at the inner end of said arm.

4,337,951

PRESSURIZED FACE SEAL WITH INITIAL RUN-IN SURFACE

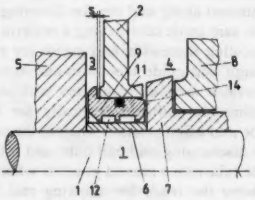
Ambrogio Perego, Wettingen, Switzerland, assignor to BBC, Brown, Boveri & Company Ltd., Baden, Switzerland

Filed Oct. 2, 1980, Ser. No. 193,359

Claims priority, application Switzerland, Oct. 16, 1979, 9293/79

Int. Cl.³ F16J *15/38, 15/48*

U.S. Cl. 277—27 **11 Claims**



1. In a sealing arrangement for sealing a rotating part in relation to a stationary part, wherein at both sides of a sealing location between said two parts there prevails a different pressure, the improvement which comprises:

a sealing bushing arranged between both of the parts which are to be sealed in relation to one another;

said sealing bushing being centered upon one of such parts while forming a sliding fit and during operation being non-rotatable;

said sealing bushing forming together with the other part a contactless seal;

said sealing bushing in its axial direction directed towards a side of the sealing location impinged at lower pressure bearing by means of a contact location which, after expiration of a running-in time of the sealing bushing forms a first sealing surface, against a related second sealing surface located at the part rotating relative to the sealing bushing;

said sealing bushing being provided with a stop portion;

said stop portion following an initial axial play bearing, following expiration of the running-in time of the sealing bushing, at the part which is stationary with respect to said sealing bushing; and

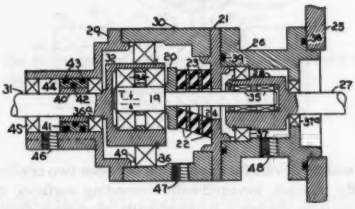
said stop portion limiting the wear of at least one of said sealing surfaces to a predetermined value.

4,337,952

HERMETIC SEALING APPARATUS FOR A ROTATING SHAFT

Ernest E. Wagner, P.O. Box 264, Yountville, Calif. 94599

Filed Oct. 25, 1977, Ser. No. 844,722
Int. Cl.³ F16L 27/10
U.S. Cl. 277—30 5 Claims



1. Means for transmitting rotary motion through an opening in the wall of a vessel to a driven shaft having a first end portion and a second end portion, at least the first end portion being within said vessel, said means comprising:

means for rotatably mounting said shaft for rotation about an axis extending through said opening,

a drive shaft positioned outside said vessel having an adjacent end portion near said opening and another end portion remote therefrom,

means for rotatably mounting said drive shaft in axial alignment with said driven shift and with said adjacent end portion spaced apart from said second end portion of said driven shaft,

an elongated motion transmitting member having an outer end portion and an inner end portion, and a mid portion therebetween,

a first bearing means fixedly attached to said adjacent end portion of said drive shaft for rotation therewith,

a second bearing means fixedly attached to said second end portion of said driven shaft for rotation therewith,

said first and second bearing means being adapted to receive and rotatably support said outer and inner end portions, respectively, of said motion transmitting member and maintain said member so that its axis is parallel to the axes of said drive shaft and said driven shaft and offset therefrom, such that when said drive shaft rotates, said motion transmitting member is moved with said first bearing means and transmits a corresponding rotation to said driven shaft,

the axis of said motion transmitting member revolving translationally about the axes of said drive shaft and said driven shaft and remaining parallel thereto without any rotation of said member relative to its own axis,

an elongated flexible sealing member surrounding the mid portion of said motion transmitting member,

means for sealing one end of said elongated flexible sealing member about said opening in the wall of said vessel, and

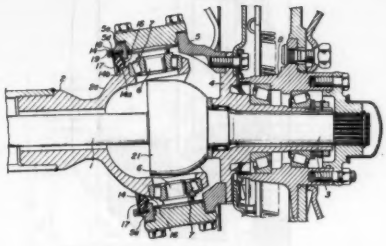
means for sealing the other end of said elongated flexible sealing member about said mid portion adjacent said outer end portion of the motion transmitting member.

4,337,953

SEALING DEVICE WITH SEAL LIPS FORMING V-SHAPE

Hideo Ikeda, Fujisawa; Masao Teraoka, Sano, and Junzo Ishimaru, Hiratsuka, all of Japan, assignors to Nissan Motor Co., Ltd. and Keeper Co., Ltd., both of, Japan

Filed Mar. 7, 1980, Ser. No. 128,019
Claims priority, application Japan, Mar. 13, 1979, 54-28891
Int. Cl.³ F16J 15/32
U.S. Cl. 277—152 8 Claims



1. In a sealing device including at least one annular seal member made of an elastic material which is held between axially spaced inner and outer fitting members, with the inside periphery of the seal member being in slidable contact with a spherical outer surface on an opposing member, the said annular seal member having at said inside periphery inner and outer axially spaced seal lips forming a generally V-shaped cross-section, which lips contact the outer spherical surface of the opposing member and cooperate therewith to define a space to be filled with grease, the improvement comprising said outer fitting member having a radially inner portion protruding axially inwardly toward said inner fitting member to thereby prevent said seal member from moving radially inwardly, said annular seal member being provided with at least two annular axial projections on its outer surface which contact said outer fitting member, one of said annular projections being in contact with the said axially inwardly protruding inner portion of said outer fitting member, said annular projections cooperating with said outer fitting member to define therebetween at least one space when said outer fitting member is urged against said seal member.

4,337,954

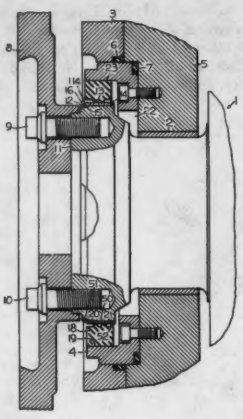
WEAR SLEEVE OIL SEAL

Robert R. Backlin, Dolton, and Jerome L. Berti, Chicago Heights, both of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 14, 1980, Ser. No. 196,472
Int. Cl.³ F16J 15/16, 15/54
U.S. Cl. 277—237 R 10 Claims

1. A sealed wear sleeve assembly comprising, a shaft, a wear sleeve receiving said shaft, a sealing ring on the inner periphery of said wear sleeve engaging the outer periphery of said shaft and forming a seal, said wear sleeve and shaft forming a metal

to metal interface for the greater portion of a mutual engagement, a housing encircling said wear sleeve, an oil seal on the



inner periphery of said housing engaging said wear sleeve to thereby provide a sealed wear sleeve assembly.

4,337,955

SEAL FOR A CYLINDER-PISTON ARRANGEMENT

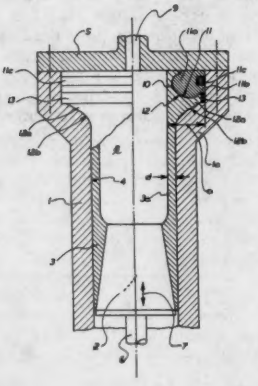
Bernhard Frey, Schaffhausen, Switzerland, assignor to Hydrowatt Systems Limited, London, England

Filed Apr. 3, 1980, Ser. No. 136,922

Claims priority, application Switzerland, Apr. 6, 1979, 3260/79

Int. Cl.³ B21D *22/12*; F16J *15/2*

U.S. Cl. 277—12 **9 Claims**



1. An apparatus comprising at least two relatively movable working members, an elastic tubular member sealingly engaging said working members as spaced locations and at least partially defining a working chamber, said tubular member stretching and contracting and said working chamber varying in volume as said working members move relatively, said tubular member having a surface bearing at least partially against a support surface formed by one of said working members, a rigid body being located in the area of the sealing engagement of said tubular member with said one of said working members, said rigid body being part of or connected with said one of said working members, and said surface of said tubular member bearing against said support surface of said one of said working members having a surface portion bonded to said rigid body, said surface portion of said tubular member bonded to said rigid body and said rigid body being immovable relative to said support surface as said tubular member stretches and contracts and the volume of said working chamber varies.

4,337,956

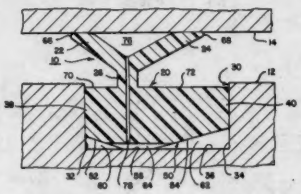
DOUBLE LIP SEAL WITH PRESSURE COMPENSATION

James A. Hopper, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Dec. 30, 1980, Ser. No. 221,425

Int. Cl.³ F16J *15/32, 15/40*

U.S. Cl. 277—29 **10 Claims**



1. A sealing device for application between two confronting, generally parallel, longitudinally extending surfaces, one of which surfaces having a longitudinally extending groove for receiving said sealing device, comprising:

a base member formed of resilient material and, in its undeformed state, being dimensioned to snugly contact said groove only at portions of its opposed sides and at a portion of its bottom surface, thereby to form first and second spaced, longitudinally extending fluid passages between said base member and said groove;

a pair of independently flexible, longitudinally extending lip members connected to said base member and extending therefrom for longitudinally uninterrupted, spaced-apart engagement with the other one of said generally parallel surfaces, thereby to form a third fluid passage between said lip members and said other surface;

means for providing transverse fluid communication between said first and second fluid passages; and

means for providing fluid communication between said third fluid passage and said transverse fluid communication means.

4,337,957

WAGON TO SLED CONVERSION KIT

Charles A. Heine, Arnold, Mo., assignor to Bertha E. Heine, Arnold, Mo.

Filed Dec. 15, 1980, Ser. No. 216,773

Int. Cl.³ B62B *19/04*

U.S. Cl. 280—7.14 **9 Claims**

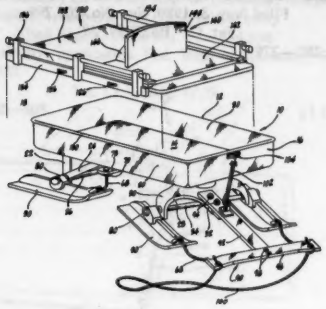
1. A conversion kit for a wagon of the type having a bottom wall, sidewalls, and an open top and having a rear axle and a pair of rear wheels mounted to a fixed wheel support and a front axle and a pair of front wheels mounted to a pivotable hitch support, the kit comprising:

(a) a tow bar having a forwardly disposed cross bar connected to the pivotable hitch support

(b) a pair of rear runners and a pair of front runners, each runner including:

1. an elongate, relatively wide ground-engaging lower member having an upturned forward end,
2. an axle-receiving pivot connection disposed intermediate the ends of said lower member, and
3. means limiting rotation of the lower member relative to the wagon but permitting substantially free rotation of

the lower member within the rotation limits said rotation limiting means including means extending between



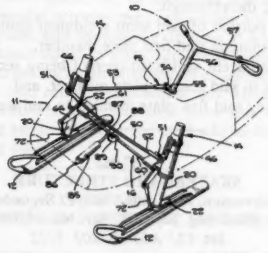
the front runners and the crossbar on opposite sides of the tow bar.

4,337,958

SUSPENSION AND STABILIZING SYSTEM FOR A SNOWMOBILE

Jerry A. Witt, Solon Springs, Wis., and Izumi Takagi, Akashi, Japan, assignors to Kawasaki Motors Corp. U.S.A., Santa Ana, Calif.

Filed Jul. 11, 1980, Ser. No. 167,695
Int. Cl.³ B62M *27/02*
U.S. Cl. 280—16 **5 Claims**



1. In a suspension and stabilizing system for a snowmobile vehicle having a pair of steerable skis and a steering means therefor, the combination of:

a suspension means for each steerable ski including a steering strut member connected to the ski and reciprocally movable in a generally vertical direction;

each of said strut members being connected to said steering means for turning of said strut members and the associated skis;

and a stabilizing means interconnecting each steering strut member for dampening movement of said strut members;

said stabilizing means including a torsion member carried by said vehicle and pivotally connected to each of the steering strut members and responsive to vertical movement of the skis,

a link means universally pivotally connecting each of the steering strut members with the torsion member,

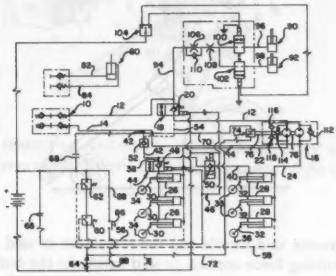
said link means including a link member lying in the planar zone defined by the axes of the steering strut member and associated ski.

4,337,959

SELF-LEVELING AND HEIGHT CONTROL HYDRAULIC SYSTEM

Leonard A. Bettin, Lyons, and William C. Swanson, Clarendon Hills, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Jun. 5, 1980, Ser. No. 156,896
Int. Cl.³ A01B *63/22*
U.S. Cl. 280—43.23 **5 Claims**



5. A flexible frame implement utilizing self-leveling and automatic height control over its level lift system provided for frame sections thereof, comprising:

at least two frame sections joined for relative angular movement;

independent hydraulic rams (26, 28) connected to said frame sections for controlling the elevation thereof;

a rotary flow divider (74) having a protruding shaft (76) adapted to be mechanically connected to, for sensing the revolutions thereof, and further adapted to be hydraulically connected to, in the level lift system;

independent hydraulic connections (22, 24) between the rotary flow divider and each of the rams to afford toothed flow metering, by the rotary flow divider, of fluid flow to and from said rams to maintain a level attitude for the implement;

rotation response means (74, 64) including a counter element (74) effective to stop the fluid flow path (40, 42) through said connections to said rams; and

a mechanical connection between the protruding shaft (76) of said rotary flow divider and the rotation responsive means (74, 64) enabling the counter element when a predetermined number of shaft revolutions has been totalled thereby in the rotation responsive means, to stop the fluid flow and halt movement of the rams at a desired height of the implement;

said counter element comprising a mechanical counter connected whereby said mechanical connection is made between the protruding shaft of the rotary flow divider and said counter element for direct drive of the latter.

4,337,960

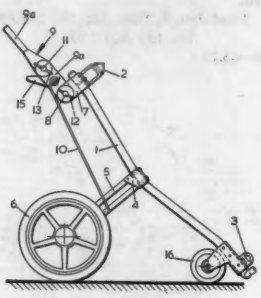
TROLLEYS

Robert M. Stewart, 31 St. Baldreds Rd., North Berwick, East Lothian, Scotland

Filed Aug. 20, 1979, Ser. No. 68,128
Int. Cl.³ B62B *3/02*
U.S. Cl. 280—47.37 R **4 Claims**

1. A collapsible trolley for the carriage of golf clubs or the like comprising a main frame member adapted to support a bag of golf clubs or the like thereon, a pair of leg members pivotally secured to said main frame member and each adapted to carry a ground wheel adjacent its free end, an elongated handle connected to the main frame member, an auxiliary wheel mounted on the main frame member adjacent the lower end thereof, first pivot means intermediate the ends of the handle

for permitting free swinging movement of the free end of the handle relative to the remainder of the trolley when in use whereby the trolley is supported on the ground wheels and auxiliary wheel for passage over the ground, second pivot



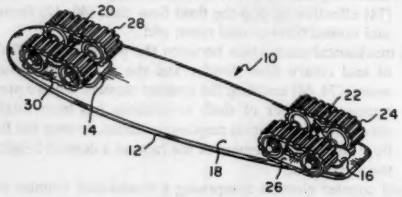
means between said handle and the remainder of said trolley for transmitting force applied on said handle to the remainder of said trolley in order to permit collapse of said trolley, and means for selectively locking said handle against rotation about said first and second pivot means.

4,337,961

SKATEBOARD

William J. Covert, 700 Mickle St., Millville, N.J. 08332, and Melvyn B. Strickman, R.D. 1, Lawrence Rd., Bridgeton, N.J. 08302

Filed Nov. 16, 1979, Ser. No. 94,977
Int. Cl.³ A63C *17/10*
U.S. Cl. 280—87.04 A **3 Claims**



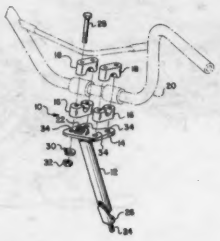
1. In a skateboard including a footboard, front and rear under carriages mounted on the lower surface of said footboard, and front and rear axles carried by said front and rear carriages respectively wherein steering is accomplished by tilting of the footboard, the improvement comprising: right and left truck means pivotally mounted on each of said axles, each truck means being pivotally movable independently of each other truck means; each of said truck means including a longitudinally extending support member pivotally mounted on its respective axle adjacent the middle of said support member and including first wheel means mounted adjacent the forward end of said support member and second wheel means mounted adjacent the rearward end of said support member an endless belt passing around and being supported by said first and second wheel means of each of said truck means and spring means for biasing each of said truck means into an intermediate position.

4,337,962

HANDLEBAR MOUNTING ASSEMBLY

David A. Allen, La Verne, and Jay D. Witala, West Covina, both of Calif., assignors to Huffy Corporation, Miamisburg, Ohio

Filed Nov. 3, 1980, Ser. No. 203,299
Int. Cl.³ B62K *21/18*
U.S. Cl. 280—279 **7 Claims**



1. In a stem assembly including a hollow stem weldment, a bolt having a head and a threaded shank, said bolt extending through said stem weldment with said head positioned outwardly of an upper end of said stem weldment and a portion of said threaded shank projecting from a lower end of said stem weldment, and a wedge nut threaded on said portion of said threaded shank, an improved pillow block mounting comprising:

a first plate member having an opening formed therethrough,

a second plate member attached to said first plate member in non-planar relationship thereto,

means defining an opening through said second plate member,

a rim projecting from said first plate member adjacent said opening therethrough,

an upper portion of said stem weldment being received in said opening in said first plate member,

said bolt adjacent said head thereof being received in said opening in said second plate member, and

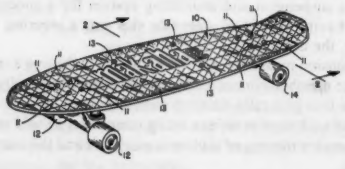
means fixing said first plate member to said stem weldment.

4,337,963

SKATEBOARD STRUCTURE

Richard L. Stevenson, 738 Loma Vista, El Segundo, Calif. 90245

Filed Aug. 13, 1979, Ser. No. 65,946
Int. Cl.³ A63C *17/02, 5/12*
U.S. Cl. 280—87.04 A **6 Claims**



5. In a skateboard which comprises a platform and wheels mounted at each end of the platform, said platform being formed of a top piece and a bottom piece, each of the two pieces having intersecting lattice-work formed integral with the inner surface thereof, said pieces being fitted to one another to cause the lattice-work of each piece to be contiguous to one another and to form a reinforcing honeycomb-like cellular core therebetween, and a plurality of screws extending through one of the pieces to be received by the other of the pieces to hold the two pieces together.

4,337,964

SKI BRAKE

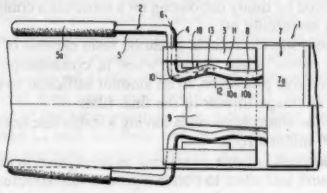
Peter Biermann; Ralf Storandt, both of Leonberg, and Rudi Feucht, Weissach, all of Fed. Rep. of Germany, assignors to GEZE GmbH, Leonberg, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,910

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936182

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 11 Claims



1. Ski brake comprising an arcuate braking member made of wire borne in a bearing plate so as to be rotatable about a transverse axis by means of pivot shafts, against the force of a spring, said pivot shafts merging at an inner end into a somewhat U-shaped actuating part and at an outer end into longitudinally extending braking arms, and control elements disposed on the actuating part and the bearing plate, said control elements acting in such a manner that the brake arms, during movement toward a non-braking, in-use skiing, position, move supplementarily with reference to a central longitudinal axis of the ski brake such that in the non-braking position they are transversely pulled-in to a position that, in use, lies at least partly on the upper side of a ski, the improvement, wherein the control elements are constituted by wire sections of the actuating part that are disposed in a common plane and outwardly diverging with respect to said central longitudinal axis from a region near the pivot shafts, and by shoulders which are substantially right-angular in transverse cross section and disposed on the bearing plate, said shoulders extending at least over a longitudinal distance equal to the longitudinal extent of said wire sections and having longitudinal edges extending substantially parallel to said central longitudinal axis which said diverging wire sections contact and slide upon shortly before said in-use skiing position is achieved until said sections reach said in-use skiing position.

4,337,965

SAFETY BINDING ADAPTED TO BE MOUNTED ON A SKI

Georges P. J. Salomon, Annecy, France, assignor to S. A. Des Etablissements Francois Salomon & Fils, Annecy, France

Continuation of Ser. No. 954,294, Oct. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 747,526, Dec. 6, 1976, abandoned. This application Mar. 27, 1980, Ser. No. 134,457

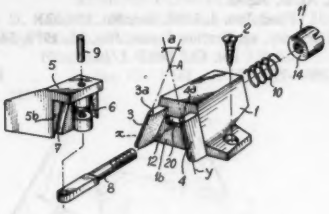
Claims priority, application France, Dec. 11, 1975, 75 37908; Mar. 22, 1978, 78 08342

The portion of the term of this patent subsequent to Oct. 9, 1996, has been disclaimed.

Int. Cl.³ A63C 9/085

U.S. Cl. 280—628 13 Claims

1. A safety binding for a ski having a longitudinal plane of symmetry comprising a one-piece jaw in which can be engaged and maintained one end of the sole of a ski boot, support means connectible to said ski in front of said jaw and providing two lateral support lines disposed respectively on either side of the longitudinal plane of symmetry of the ski, resilient means urging the jaw against said support means at the support lines, said support means and jaw being engaged such that the jaw can pivot on either line of support, the lines of support viewed along the longitudinal axis of the ski converging towards a point disposed above the ski in order that in one direction of lateral movement of the jaw, the jaw will pivot about one line of support and in the other direction of lateral movement of the jaw, the jaw will pivot about the other line of support, and means for retaining said jaw on said support means while



allowing limited upward movement of at least part of said jaw in the course of pivoting of the jaw around one of the support lines.

4,337,966

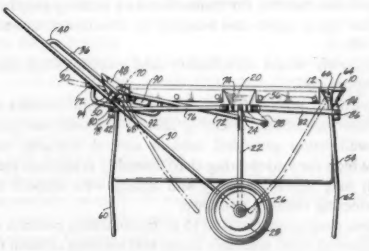
FOLDING UTILITY CART

Roger D. Stevens, 323 W. Highland Ave., Sierra Madre, Calif. 91024

Filed May 5, 1980, Ser. No. 146,746

Int. Cl.³ B62B 1/12

U.S. Cl. 280—645 11 Claims



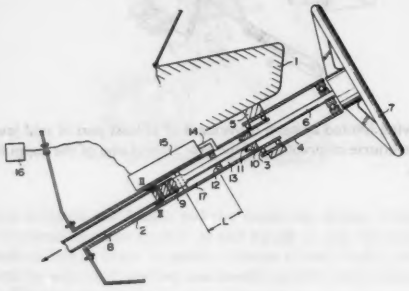
1. A folding cart comprising a container support frame, an axle, a pair of spaced wheels on the axle, a handle secured to the axle, and a pair of spaced upright members secured to the axle extending above the wheels, a container suspended between the upright members from the support frame, the support frame being pivotally attached to the upper end of and supported between the upright members, adjustable means securing the support frame to the handle adjacent one end of the container to hold the container, handle and upright members in rigid relationship, a pair of leg members pivotally secured to the container support frame respectively in front of and behind the axle, and control means linking the leg members for adjusting the angular position of the two leg members relative to the container between a substantially vertical position in which the container is prevented from tipping about the axle and a folded position in which the container is freely supported and transportable on the two wheels.

4,337,967

STEERING DEVICE

Akio Yoshida, Toyota, and Nobuyuki Inokuchi, Sakaemachi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 4, 1980, Ser. No. 156,323
Claims priority, application Japan, Jun. 25, 1979, 54-80441
Int. Cl.³ B62D 1/18
U.S. Cl. 280—777 8 Claims



1. A retractable steering wheel assembly for a vehicle comprising:

a steering column assembly comprising a cylindrical tubular member having its lower end portion fixably mounted to a first portion of the body of said vehicle and its upper end portion supported by a second portion of said vehicle body;

a steering shaft assembly at least partially contained within and rotatably supported by said steering column assembly, said steering shaft assembly having a lower end extending below said lower end portion of said steering column tubular member for connection to a steering gear box, and having an upper end adapted for attachment to a steering wheel;

a steering wheel attached to said steering shaft assembly upper end;

a partition wall mounted in said upper end portion of said steering column assembly tubular member, said partition wall being provided with a central opening through which the said steering shaft assembly is inserted such that it may move rotatably and axially with respect to said steering column assembly;

a disc shaped piston fixed to an intermediate position of said steering shaft assembly inside said steering column tubular member and located downwardly from the position where said partition wall is located, said piston being of a dimension and shape such that its outer peripheral surface is in contact with and movable and rotatable relative to the inner surface of said steering column assembly tubular member, whereby said partition wall, said inner surface of said steering column assembly tubular member and said piston define a cylindrical chamber having an effective length which increases as said steering shaft assembly upper end is moved downwardly with respect to said steering column assembly;

pressure means for increasing the pressure within said cylindrical chamber, whereby said piston, said steering shaft assembly upper end and said steering wheel fixed thereto will all be positively retracted downwardly upon operation of said pressure means; and

collision sensing means for causing said pressure means to operate in the event of a collision involving said vehicle.

4,337,968

SENSITIZED RECORD SHEET

Theodore Maierson, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 961,497, Nov. 17, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,450
Int. Cl.³ B41M 5/22
U.S. Cl. 282—27.5 19 Claims

1. A thin spongy porous color developler film for use in producing a color when in contact with a suitable dye precursor, produced by thinly depositing on a substrate a composition consisting essentially of:

an organic solvent soluble phenolic resin capable of serving as an acidic image former when in combination with a suitable dye precursor, in an amount sufficient to serve as such an image former in the final film;

a lipophilic amorphous silica having a stable size not exceeding 50 millimicrons;

a fatty alcohol capable of serving as an adjunct in combination with said silica to obtain a porous film structure without substantially adversely affecting the color forming reaction or the color so formed, the combined amounts of said fatty alcohol and lipophilic silica being sufficient to form a spongy capillary skeletal structure in the deposited film; and

an organic solvent capable of dissolving said phenolic resin and said fatty alcohol and which does not substantially interfere with the color-forming reaction.

19. A method for producing a sheet having printed thereon a color developer being capable of producing a color when in contact with a suitable dye precursor, comprising:

printing with a conventional printing press, in a quantity corresponding to 0.4 to 1.4 g/m^2, a composition consisting essentially of:

10–70% of a zincated or non-zincated novolac resin;

2–20% of cetyl alcohol;

0.5–6% of pyrogenic hydrophobic silica; and

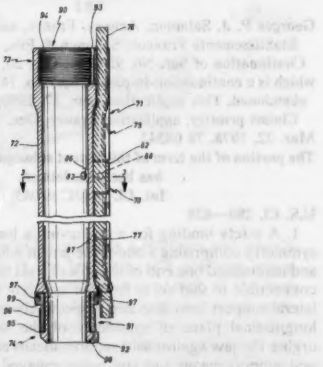
18–82% of a non-volatile solvent for said novolac resin and said cetyl alcohol.

4,337,969

EXTENSION MEMBER FOR WELL-LOGGING OPERATIONS

Pierre C. Escaron, Houston, and Joachim A. Hoppe, Spring, both of Tex., assignors to Schlumberger Technology Corp., Houston, Tex.

Filed Oct. 6, 1980, Ser. No. 194,010
Int. Cl.³ F16L 57/00
U.S. Cl. 285—24 3 Claims



1. A rigid extension member for use with a well-logging cable in a borehole, comprising:

a cylindrical tube having first and second ends;

means for protecting a well-logging cable, said means being disposed along substantially the entire length of, and on the outer surface of, said cylindrical tube and includes at least two rigid elongate members integrally secured on the outer surface of said tube, which members form a generally U-shaped elongate channel which opens outwardly away from the outer surface of said tube, for receiving the well-logging cable therein;

means for connecting each of said ends of the tube to a tube of another extension member, said means for connecting includes means for aligning said means for protecting with a means for protecting of another extension member; and

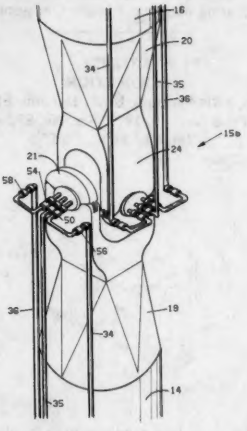
means for detachably securing the well-logging cable within said means for protecting, and includes at least one generally U-shaped clamp which releasably engages the tube, said at least one clamp being disposed intermediate the ends of the tube, whereby the well-logging cable is protected in said borehole and can be selectively removed from said tube without damage to the well-logging cable.

4,337,970

UNIVERSAL JOINT FOR MULTIPLE CONDUIT SYSTEM

Richard H. Gunderson, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 20, 1979, Ser. No. 105,678
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—136 **12 Claims**



1. A universal joint comprising:

a first longitudinally extending member;

a second longitudinally extending member;

means for connecting said first member to said second member to permit said first member to pivot about an axis normal to the longitudinal axis of the said first member and to permit said second member to pivot about an axis normal to the pivot axis of said first member;

an elbow conduit extending through said connecting means;

a first rigid conduit supported by said first member and connected to one end of said elbow conduit;

a second rigid conduit supported by said second member and connected to the other end of said elbow conduit;

a first pivot means connecting said first conduit and said elbow conduit for enabling pivotal movement between said elbow conduit and said first conduit, said first pivot means being offset from the pivot axis of said first member; and

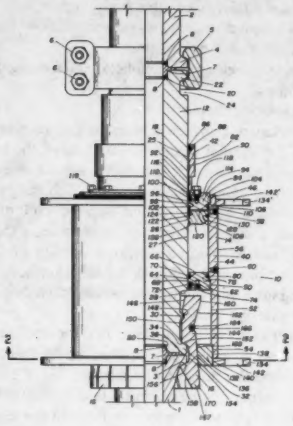
a second pivot means disposed in said first conduit for enabling rotational movement of said first pivot means around the pivot axis of said first longitudinally extending member.

4,337,971

REMOTE CONNECTOR

William D. Kendrick, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 7, 1980, Ser. No. 176,220
Int. Cl.³ F16L *37/18*
U.S. Cl. 285—315 **3 Claims**



1. A hydraulically actuated connector releasably joining a first flow line to a second flow line in a fluidtight relationship, said connector being releasably secured to one end of said first and second flow lines having seal rings disposed therebetween creating a fluidtight seal and being movable between a first open position to accept connection of said second flow line and a second closed position securing said second flow line thereto by the application of hydraulic pressure thereto, said connector comprising:

body means having

a bore therethrough having, in turn, an annular recess at each end thereof which receives a portion of each of said seal rings therein to facilitate the fluidtight relationship between said connector and said first and second flow lines,

a first flanged end portion,

a threaded portion on the exterior thereof,

an annular recess in the exterior thereof having, in turn, an annular circumferential rib therein,

a second flanged end portion having, in turn, an angular annular shoulder thereon and annular recess in the end surface thereof, and

abutment piston means secured to the threaded portion on the exterior of the body means;

cylinder sleeve means disposed about the body means and slidably sealingly engaging the abutment piston means and the exterior of the body means, the cylinder sleeve means comprising:

cylindrical sleeve means having

first annular end cap piston means secured to one end thereof having, in turn, an annular tubular member secured thereto slidingly sealingly engaging the exterior portion of the body means,

first fluid port means located adjacent the first annular end cap piston means between the annular end cap piston means and the abutment piston means secured to the exterior of the body means,

second end cap piston means secured to the interior

thereof intermediate the ends of the cylinder sleeve means,

second fluid port means located adjacent the second end cap piston means between the second end cap piston means and the abutment piston means secured on the exterior of the body means, and

lug cone forcing means secured to the other end thereof having, in turn, flange ring means secured thereto;

segmental lug means pivotally mounted about the body means having a portion thereof pivotally engaging the circumferential rib on the body means and a portion thereof adapted to engage said second flow line, the segmental lug means comprising:

a plurality of elongate members, each elongate member including,

on the interior thereof,

a first tapered surface, a recess which receives a portion of the annular circumferential rib of the body means therein, a first flat horizontal area, a second tapered surface which abuts a portion of the angular annular shoulder on the second flanged end of the body means, a second flat horizontal area, a third tapered surface adapted to engage a portion of said second flow line and a fourth tapered surface adapted to engage a portion of said second flow line, and

on the exterior thereof,

a first flat horizontal surface, first tapered surface terminating in a recess, a second tapered surface and a second flat horizontal area; and

segmental spring retainer means retained within the recess in the exterior of each elongate member of the segmental lug means

whereby said hydraulically actuated connector is closed by the application of said hydraulic pressure to the second fluid port means of the cylinder sleeve means while venting the first fluid port means thereby moving said connector from said first open position wherein the lug cone forcing means of the cylinder sleeve means engages the first tapered surface on the exterior of each elongate member of the segmental lug means causing the first tapered surface on the interior thereof to abut a portion of the annular recess in the exterior of the body means to said second closed position wherein the second and third tapered surfaces on the interior of each elongate member of the segmental lug means engage a portion, respectively of said angular annular shoulder on said second end and a portion on said second flow line and the lug cone forcing means engages the second tapered surface on the exterior of each elongate member of the segmental lug means, the cylinder sleeve means moving with respect to the body means by the translation of the cylinder sleeve means along the body means by the application of said hydraulic pressure to the second fluid port, and is opened by the application of said hydraulic pressure to the first fluid port means of the cylinder sleeve means while venting said second fluid port means thereby moving said connector from said second closed position wherein the lug cone forcing means of the cylinder sleeve means engages the second tapered surface on the exterior of each elongate member of the segmental lug means causing portions of each elongate member of the segmental lug means to engage portions of said flow line to said first open position having the lug cone forcing means of the cylinder sleeve means engaging the first tapered surface on the exterior of each elongate member of the segmental lug means, the cylinder sleeve means moving with respect to the body means by the translation of the cylinder sleeve means along the body means by the application of said hydraulic pressure to the first fluid port means.

4,337,972

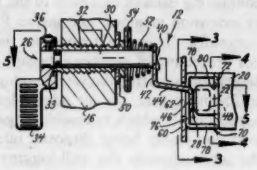
PANEL BOARD SAFETY LATCH ASSEMBLY

Thomas E. Gill, St. Louis, Mo., assignor to Killark Electric Manufacturing Co., St. Louis, Mo.

Filed Oct. 24, 1979, Ser. No. 87,652

Int. Cl.³ E05C 5/02

U.S. Cl. 292—67 **8 Claims**



1. A safety latch assembly for a circuit breaker panel board, said panel board including a cabinet in which one or more circuit breakers are mounted behind a panel member, the breakers being operable between ON and OFF positions by an actuating member engaged by a handle mechanism mounted in the cover of the cabinet, said safety latch assembly comprising a movable member operable in response to movement of said actuating member, said movable member having means engaging said handle mechanism preventing engagement of said actuating member by said handle mechanism and the closing of the cabinet cover to which said handle mechanism is mounted when said actuating member is in the ON position.

4,337,973

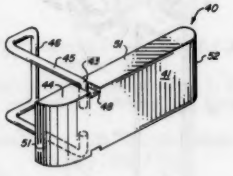
DOOR LOCK

Jean L. Flynn, 1401 Saratoga Blvd., DeLand, Fla. 32720

Filed Nov. 19, 1979, Ser. No. 95,547

Int. Cl.³ E05C 17/54

U.S. Cl. 292—290 **8 Claims**



1. A portable door lock comprising in combination:

a body member having at least two end portions and an aperture on each of two edges thereof;

a retaining hook member movably attached to said body member for movement thereon and having a hooking end portion shaped to engage an opening in a door jamb striker plate and a pair of spaced arms extending from said hooking end portion to said body member, said spaced arms being of a length to extend from the opening in a door jamb striker plate to one edge of the striker plate and said retaining hook member arms having a pair of spring loaded protrusions disposed in said apertures of said body member; and

said retaining hook member having a folded position with said spaced arms generally parallel and adjacent to said body member, and a connecting position with said spaced arms extending from one end portion of said body member to allow a door to be closed with said retaining hook member hooked to a striker plate opening and a locking position with said retainer hook member arms extending from said body member in a generally perpendicular direction, whereby said hook can be connected to a door

striker plate opening and said body extended over a portion of the edge of a door and door jamb for locking the door against entry.

4,337,974

VEHICLE ROOF

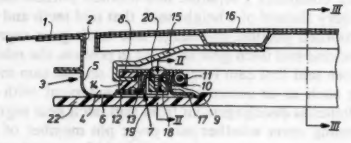
Georg Kohlpaintner, Maisach, and Wolfgang Rottenfusser, Hanfeld, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,825

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851939

Int. Cl.³ B60J 7/04

U.S. Cl. 296—214 5 Claims



1. Vehicle roof with a roof aperture surrounded by a frame, said frame defining, at least in a zone of a front edge and lateral edges of the roof aperture, a gutter having a U-shaped cross-section, said roof aperture being closeable by a sliding top which is mounted by sliding blocks for displacement in guide tracks extending along the lateral edges of the roof aperture, said guide tracks each being formed on a vertical wall defining a side of the gutter nearest the roof aperture, said vertical wall having the shape of a Ω in cross section, and a cover attached by screws to the topside of said vertical wall, characterized in that a one-piece mounting strip is arranged in a cavity of the vertical wall, the mounting strip being provided with holes within which the screws serving to attach the cover are fastened to the strip; and wherein a rigid headliner extends up to the edge of the roof aperture, further characterized in that openings for retaining fastening elements for the headliner are provided in the mounting strips.

4,337,975

SUNSHINE ROOF STRUCTURE OF VEHICLE

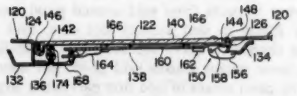
Masahiro Tamamushi, Tokyo, and Yoshimasa Tuchiya, Sayama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 17, 1980, Ser. No. 131,180

Claims priority, application Japan, Mar. 16, 1979, 54-34640[U]

Int. Cl.³ B60J 7/10

U.S. Cl. 296—215 19 Claims



1. A sunshine roof structure of a vehicle, comprising in combination:

a roof panel formed with an opening having opposite ends in a predetermined direction of the vehicle;

a light-transmitting panel placed within said opening and movable between a first position closing said opening and a second position allowing the opening to be open, said light-transmitting panel having a member retaining the same in said first and second positions adjacent one edge opposite to one of said opposite ends of the opening;

a retaining member fixedly positioned on said light-transmitting panel at the position with respect to said roof panel in the vicinity of one of said opposite ends of said opening;

a light-shield panel having one end detachably engaging with said retaining member for motion with said light-transmitting panel; and

a latch mechanism for providing releasable locking engagement between the light-transmitting panel and light-shield panels, said latch mechanism including a first member secured on the light-shield panel adjacent the other end thereof and a second member secured on said light-transmitting panel adjacent the other end thereof and opposite to said first member, said first and second members being interengageable with respect to one another and permitting releasing with respect to one another.

4,337,976

REAR OF AN AUTOMOBILE, PREFERABLY A PASSENGER CAR

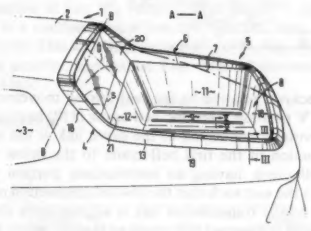
Anatole Lapine, Doeffingen, and Reinhold Schreiber, Renningen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,208

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1979, 2903161

Int. Cl.³ B60J 7/00

U.S. Cl. 296—216 16 Claims



1. Rear body construction of an automobile vehicle of the type having a rearwardly directed door opening at the rear end of the vehicle body that, as seen from a side of the vehicle, forms a stepped outline with a roof portion of the vehicle body, comprising a body element that closes the door opening in the body, said body element including: a horizontal wall and upright walls which define a generally trough-shaped receptacle which has a top side that is open toward the exterior of the vehicle body; a frame, connected to said upright walls at least in sections, that conforms substantially to the entire perimeter of the door opening for mating therewith; an upright section in the vicinity of the roof portion; and a window pane in the region of the upright section.

4,337,977

THREE-WAY HANDLE-OPERATED WALL-AVOIDING RECLINER CHAIR

Walter C. Rogers, Jr., Denton, and David S. Hoffman, High Point, both of N.C., assignors to Royal Development Company, Inc., High Point, N.C.

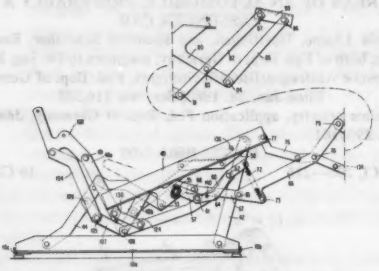
Filed Sep. 12, 1980, Ser. No. 186,414

Int. Cl.³ A47C 1/02

U.S. Cl. 297—85 20 Claims

1. A three-way wall-avoiding, recliner chair comprising: a base, a seat and armrest unit including armrests fixed to the seat, a backrest mounted to and movable relative to the seat, a footrest including a footrest linkage mounted to the seat for movement between a retracted position adjacent the seat and an extended position projected forwardly from the seat, a

handle-operated, actuating mechanism mounted to the seat for actuating the footrest linkage between extended and retracted positions, a linkage system mounting the seat and armrest unit to the base and mounting the backrest to the seat and armrest unit for movement between a normal generally upright position and a plurality of reclining positions, the linkage system comprising, front and rear seat mounting links **(42, 44)** pivoted to the base and pivotally connected relative to the seat, a first bell crank **(107)** pivotally connected to the rear seat mounting link, a drive link **(104)** having one end portion pivotally connected to the backrest and an opposite end position pivotally connected to said first bell crank link **(107)**, a transmission link **(63)** connected between the handle mechanism and the first bell crank for transmitting a force to the rear seat mounting link **(44)** to move the seat forwardly relative to the base into a TV position when the footrest is initially actuated to extended position by means of the handle mechanism, a restraining link **(124)** pivotally connected to and between the seat and the transmission link for preventing movement of the drive link



and the backrest relative to the seat during movement of the seat into TV position, a second bell crank **(110)** having one end portion pivotally connected to the drive link at the same pivotal connection of the first bell crank to the drive link, said second bell crank having an intermediate portion pivotally mounted to the seat such that the pivotal connection of the first bell crank to the transmission link is aligned with the pivotal connection of the second bell crank to the seat when the seat is in the TV position permitting the backrest to be moved relative to the seat and the seat to be reclined further relative to the base upon application of pressure on the backrest by the chair occupant causing a drive force to be transmitted downwardly from the backrest through the drive link **(104)** to the bell crank link, and a pitch control link **(120)** pivotally connected to an end portion of the second bell crank **(110)** opposite the first end portion thereof and pivotally connected relative to the seat for transmitting actuating forces to the seat and for controlling the pitch of the seat when moving into reclining positions beyond TV position.

4,337,978

MECHANISM FOR ADJUSTING INCLINATION ANGLE OF SEAT

Kenichi Kazaoka, Nagoya; Koji Hirao, Kariya, and Hideki Takahasi, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 23, 1980, Ser. No. 143,012

Claims priority, application Japan, Apr. 28, 1979, 54-52814

Int. Cl.[3] **A47C** *1/026;* **B60N** *1/06*

U.S. Cl. 297—367 **2 Claims**

1. A mechanism for adjustably connecting a seat and a back rest, especially for motor vehicles, comprising:

a seat plate adapted to be fixedly connected to the seat;

a tiltable plate adapted to be fixedly connected to the back rest;

pivot means pivotally connecting said seat plate and said tiltable plate together;

spring means for normally urging said tiltable plate toward forward turning upon positioning of a passenger on the seat

a latch gear segment fixed to said tiltable plate;

first pawl means having a number of teeth formed on the periphery thereof for selective meshing engagement with said latch gear segment and being pivoted to said seat plate;

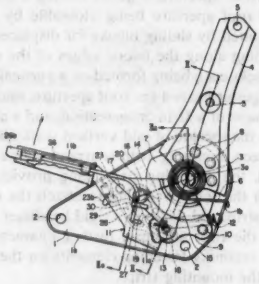
lever means pivoted to said plate and operatively connected to said first pawl means through first cam means;

second pawl means having a number of teeth formed on the periphery thereof selective meshing with said latch gear segment;

a pivot pin member connected with said second pawl means and operatively connected to said lever means through second cam means;

guide slot means slidably engaged by said pivot means of said second pawl means, wherein said second pawl means further comprises a separate non-toothed portion on the periphery thereof of a height such that said teeth and said non-toothed portion co-engage said latch gear segment for locking said latch gear segment in postion, the relation between said first cam means and said second cam means being such as to assure alternate engagement with and simultaneous disengagement from said latch gear segment depending upon whether said pivot pin member of said second pawl means engages a first part of a second part of said second cam means, respectively;

control means for changing the throw of said lever means to



thereby change a position of said pivot pin member between said first and second parts of said second cam means;

a manual handle extending from said lever means within convenient reach of the operator; and

a manual knob member connecting said control means and neighboring said manual handle for providing a common grip by a palm of the operator;

wherein said first cam means further comprises a slot cam cut in said first pawl means and a pin member projecting from said lever means for sliding fit in said slot cam and wherein said second cam means further comprises an arcuate slot cam cut in said lever means and said pivot pin member projects from said second pawl means for slidingly fitting in said arcuate slot cam, said arcuate slot being shaped in curvature such that a smaller throw of said lever means causes said pivot pin member of said second pawl means in said first part and a larger throw of said lever means causes said pivot pin member in said second part of said arcuate slot cam;

and further a sub-plate fixedly connected to said seat plate for reenforcing said seat plate and which is in parallel with said seat plate so that a thin compartment is formed between said seat plate and said sub-plate such that latch gear segment, said first and second pawl means and a part of said lever means are mounted within said compartment; and

wherein said control means for changing the throw of said

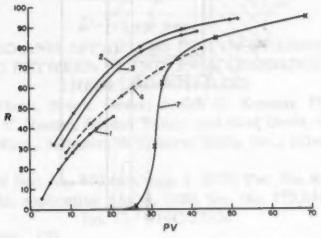
lever means further comprises a window cut in said subplate and a rod having a finger portion disposed in said window, and wherein said window further comprises first and second stopper portions radially circumferentially spaced apart from each other, said rod being slidably supported by said lever means so as to shift said finger portion between first and second positions in said window engageable with said first and second stopper portions, respectively.

4,337,979

PROCESS FOR THE IN-SITU LEACHING OF URANIUM

Tsoung-yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,890
Int. Cl.[3] E21C *41/14*
U.S. Cl. 299—4 7 Claims



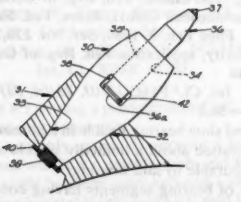
1. In a method for the recovery of uranium from a subterranean uranium-containing deposit penetrated by injection and production systems wherein an aqueous lixiviant containing an oxidizing agent, sulfuric acid, and carbon dioxide is introduced into said deposit via said injection system and displaced through said deposit to solubilize uranium therein and thereafter recovered from said deposit via said production system, the improvement comprising prior to the injection of said lixiviant injecting an aqueous solution of sulfuric acid and oxidizing agent which is substantially free of carbon dioxide into said deposit in an amount of at least one pore volume.

4,337,980

WEDGE ARRANGEMENTS AND RELATED MEANS FOR MOUNTING MEANS, BASE MEMBERS, AND BITS, AND COMBINATIONS THEREOF, FOR MINING, ROAD WORKING, OR EARTH MOVING MACHINERY

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 41,075, May 21, 1979. This application Apr. 8, 1980, Ser. No. 138,527
Int. Cl.[3] E21C *35/18*
U.S. Cl. 299—91 69 Claims



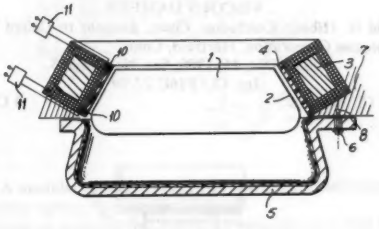
1. A mounting means-base member combination for use in mining, road planing or earth moving equipment, the combination comprising a mounting means having a shank receiving perforation to receive the shank of a bit having a cutting end at one end thereof, said mounting means being provided with a first body portion to be engaged with the base member; and a base member provided with socket means to receive said first body portion of said mounting means, the improvement which is characterized by: said first body portion being tapered and said socket means comprising a cavity which is correspondingly tapered so as to just nicely receive said first body portion therein with a wedge action whereby to prevent relative movement between said first body portion and said base member, said tapered cavity extending through a substantial portion of said base member, said base member completely surrounding that part of said tapered first body portion which is received in said tapered cavity, said mounting means-base member combination being fixed against rotation about its axis; and retaining means to retain said tapered first body portion in its seated position within said tapered cavity and to urge said first body portion into full seated position within said base member; and said mounting means having a second body portion extending beyond said tapered cavity, said second body portion and said base member being free of abutting surfaces so as to provide clearance for said wedge action, said shank receiving perforation being at least in said second body portion and extending within at least a substantial length thereof.

4,337,981

DRIVE AND SUPPORT ARRANGEMENT FOR A DISC-SHAPED ROTOR

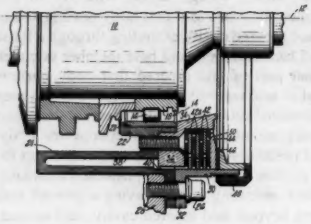
Peter Meinke, Sulzberg 7, 8061 Grossinzemoos, Fed. Rep. of Germany

Continuation of Ser. No. 860,737, Dec. 14, 1977, abandoned, which is a continuation of Ser. No. 601,705, Aug. 4, 1975, abandoned. This application Aug. 27, 1979, Ser. No. 70,334
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1974, 2437667
Int. Cl.[3] F16C *39/06*
U.S. Cl. 308—10 5 Claims



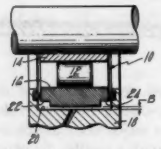
1. An improved combined drive and support apparatus comprising a disc-shaped rotor provided with ferromagnetic materials, having a major vertical axis and a conical peripheral surface provided with a smaller diameter at its upper end, said apparatus being further defined by, a ring-shaped stationary member encompassing said conical peripheral surface of said rotor; said ring-shaped stationary member having an inner surface facing said conical peripheral surface, said inner surface and said conical surface being separated in use by a uniform air gap; the improvement comprising: providing said stationary member with magnetic coil means having drive and support coils formed of a common core for producing a rotating magnetic field for driving said rotor and additionally providing a magnetic field oriented and inclined relative to the rotor axis for positioning said rotor, and measuring sensor means within said magnetic coil formed by said stationary member for measuring the position of the rotor, whereby said rotor is accessible at least one end and is supported in a contactless manner by magnetic forces created by said magnetic coil means.

4,337,982
FRICTION DAMPER
Donald C. Moringiello, Windsor, Conn., and Stephen H. Dallmann, Minneapolis, Minn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 11, 1980, Ser. No. 215,301
Int. Cl.[3] F16C 27/04
U.S. Cl. 308—26 3 Claims



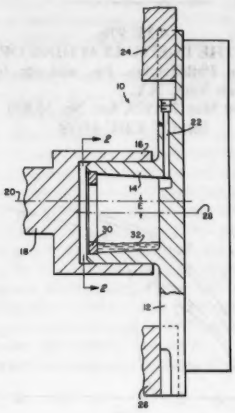
1. For a rotor rotatably supported by a bearing, damper means connected to said bearing, said damper means comprising a pair of concentric cylindrical members, a plurality of axially juxtaposed plate-like elements surrounding a portion of said rotor mounted in friction relationship with each other, each plate-like element having an outer diameter and an inner diameter, means for urging alternate plate-like elements to bear against the pair of concentric rings in a pattern that includes alternate plate-like elements to engage the outer concentric cylinder an the adjacent plate-like element to engage the inner concentric cylinder and means for urging each plate against each other to control the amount of force for attaining relative movement between adjacent plates and means attached to said bearing for restoring said plates to a predetermined position when the rotor is in a balanced condition.

4,337,983
VISCOUS DAMPER
David H. Hibner, Colchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 11, 1980, Ser. No. 215,303
Int. Cl.[3] F16C 27/04
U.S. Cl. 308—26 3 Claims



1. A viscous damper for a bearing having an outer race, a fixed annular member having a complimentary circular surface surrounding the outer diameter of said outer race and being spaced therefrom defining a circular cavity for receiving oil therebetween, sealing means disposed adjacent the side edges of said outer race to retain the oil in said circular cavity, recesses formed in said outer diameter of the outer race adjacent each of said side edges for increasing the volume where the oil between the space between said outer race and said complimentary circular surface can migrate, said recesses defining recirculating grooves so that the whirling motion imparted to the outer race by said bearing when in its rotating mode recirculates the oil within the circular cavity while permitting the pressure gradient along the expanse between said side edges to remain substantially at a fixed predetermined value.

4,337,984
LUBRICATION MEANS FOR A JOURNAL AND BEARING
Robert W. Shaffer, Campbellsville, Ky., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jan. 2, 1981, Ser. No. 222,051
Int. Cl.[3] F16C 33/10
U.S. Cl. 308—103 13 Claims

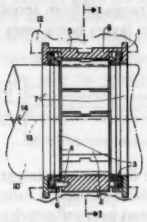


1. Lubrication means for a journal and bearing, comprising:
first means defining a bearing having a bearing surface; and
second means defining a shaft; wherein
said shaft and bearing are journaled together (a) to effect support of said shaft by said bearing surface, and (b) to accommodate rotation of said shaft relative to said bearing about a given axis; and
means for supplying lubrication to said bearing surface; wherein
said supplying means includes means formed in one of said first and second means for storing a supply of lubricant on only one side of said given axis;
said storing means also comprises means defining a reservoir of segment-shaped cross-section;
said reservoir has an arcuate surface which is eccentric to said given axis;
said first means has a bearing axis; and
said arcuate surface is concentric with said bearing axis.

4,337,985
PIVOTED SHOE BEARING
Paul Gerling, Oberhausen, Fed. Rep. of Germany, assignor to Glyco-Maschinenbau GmbH, Essen, Fed. Rep. of Germany
Filed Feb. 8, 1980, Ser. No. 120,110
Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920344
Int. Cl.[3] F16C 17/03, 23/04, 33/74
U.S. Cl. 308—36.1 4 Claims

1. A pivoted shoe bearing fixable in a housing for supporting a shaft for rotation about a limitedly tiltable axis, comprising:
a frame securable to said housing;
a plurality of bearing segments having concave cylindrical surfaces with radii of curvature equal to the radius of said shaft, said segments being pivotally mounted in said frame in a substantially circular configuration for engaging at said surfaces said shaft to enable radial motion thereof; and
a pair of sealing rings floatingly mounted on said frame at

axially opposite sides of said segments for limiting lateral motion thereof and for forming a lubricant-tight fit with



said shaft to ensure retention of sufficient lubricant by said bearing.

4,337,986

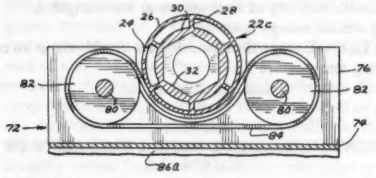
METHOD AND APPARATUS FOR INCREASING THE SPACING BETWEEN PLANTS IN ACCORDANCE WITH THEIR GROWTH RATE

John T. Haub, Maple Grove; James G. Krassas, Plymouth; Stanley C. Rustad, Golden Valley, and Noel Davis, Wayzata, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Division of Ser. No. 930,448, Aug. 2, 1978, Pat. No. 4,216,618. This application Aug. 5, 1980, Ser. No. 175,544

Int. Cl.³ F16C *27/04*

U.S. Cl. 308—177 **4 Claims**



1. A bearing assembly for rotatably supporting a portion of a first elongated tubular member comprising a pair of laterally spaced cylindrical rollers, means for supporting said rollers in spaced apart relationship, and a flexible belt entrained about said cylindrical rollers, the upper portion of said belt between said rollers cradling said portion of said first tubular member, said bearing assembly being the sole support for said tubular member at said supported portion.

4,337,987

TRAPPED-KEY SECURITY UNIT

Stuart M. Brooks, 9522 Briar Glenn Way, Gaithersburg, Md. 20760, and Martin R. Fagan, Potomac, Md., assignors to Stuart M. Brooks, Gaithersburg, Md.

Filed Sep. 10, 1980, Ser. No. 185,751

Int. Cl.³ E05B *11/00*

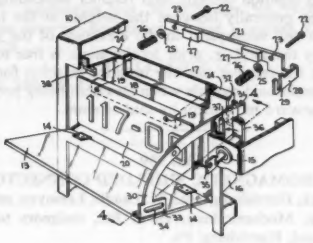
U.S. Cl. 312—219 **12 Claims**

1. In a cabinet for storing a predetermined article, a security locking arrangement comprising:

key and lock assembly means comprising a key and a lock having a cam which is rotatable with said key through a prescribed angle between unlocked and locked positions, said key being insertable into said lock, said lock including means for preventing removal of said key therefrom except when said cam is in said locked position;

a cabinet door assembly for said cabinet capable of moving between open and closed positions and including closure means for preventing rotation of said cam to said locked position unless said door assembly is in said closed position; and

actuable means responsive to the presence of said article in



said cabinet for permitting rotation of said cam to said locked position and for preventing cam rotation to said locked position when said article is absent from said cabinet.

4,337,988

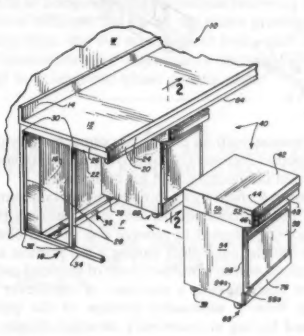
MODULAR FURNITURE SYSTEM

Robert Schenck, Mishicot, Wis., assignor to Curtin Matheson Scientific, Inc., Houston, Tex.

Filed Mar. 17, 1980, Ser. No. 131,032

Int. Cl.³ A47B *87/00, 91/00*

U.S. Cl. 312—250 **3 Claims**



1. A modular furniture system for convenient rearrangeable assembly upon a floor comprising:

(a) one or more movable furniture modules, each said module including:

(1) a planar top end,

(2) at least one rear roller means fixedly secured to a rear portion of said module for movement of said module upon said floor and movement vertically concurrently with said rear portion, and

(3) adjustable support means secured to support a forward portion of said module upon said floor;

(b) a work surface structure including a substantially horizontal countertop and support structure for said countertop providing an open space for moving said module into an installed position in which said module is entirely beneath said countertop;

(c) means automatically engaging said rear roller means, including a depression for receiving said rear roller means, and elevating the rear roller means and said rear portion of said module, relative to the floor, upon a rearward movement of said module into an installed position beneath said countertop, said adjustable support means being adjustable to elevate the forward portion of said module, when said module is located in said installed position, to corre-

spond to the elevated level of the rear portion to substantially level and planar top end relative to the floor; and

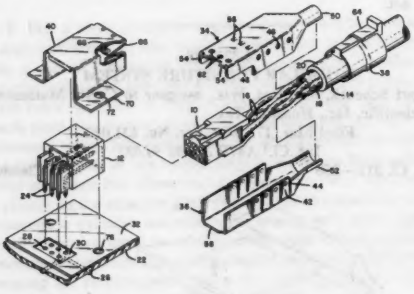
(d) said work surface structure including a retainer depending from said countertop forward of the module in the installed position thereof, said retainer depending to an elevation generally between the heights of the top end prior to and subsequent to the elevation of the module whereby the module, prior to elevation, is free to move beneath the retainer into the installed position for elevation therein, said module when elevated, being precluded from outward movement by said retainer.

4,337,989

ELECTROMAGNETIC SHIELDED CONNECTOR

John C. Asick, Harrisburg; John M. Landis, Lemoyne, and Leon T. Ritchie, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 28, 1980, Ser. No. 154,162
Int. Cl.³ H01R *13/506, 13/648*
U.S. Cl. 339—143 R **11 Claims**



1. In combination with an electrical connector having mating first and second members, a kit providing electromagnetic shielding for said connectors, said kit comprising:

a first enclosure formed by an intermating metallic inner first shell and outer second shells, said shell defining therebetween a cavity adapted to receive one of said connector members therein, each shell having a tail portion adapted to be received within a braided layer of shielded cable said inner first shell having a plurality of cantilever beams extending from a substantial portion of the periphery thereof and having an outwardly directed dimple spaced from the free end of each beam, said outer second shell having a flange depending from a like portion of the periphery thereof and adapted to receive said beams therein in interference fit, said flange also having an array of apertures spaced to each receive a respective dimple to secure said shells together,

clamp means adapted to embrace said cable bringing said braided layer into good mechanical and electrical contact with said tail portions, and

a second enclosure formed by a metallic shroud adapted to substantially enclose said second member and engage shielding associated therewith and the metallic shells of said first enclosure.

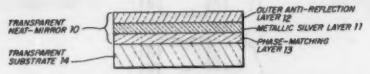
4,337,990

TRANSPARENT HEAT-MIRROR

John C. C. Fan, Chestnut Hill, and Frank J. Bachner, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 498,160, Aug. 16, 1974, abandoned. This application May 27, 1976, Ser. No. 690,696
Int. Cl.³ G02B *5/28*
U.S. Cl. 350—1.7 **26 Claims**

1. A composite film consisting of three continuous and discrete layers, one of said layers being metallic silver in a thickness of from about 30 Å to about 200 Å and the other two layers being transparent and positioned on opposite sides of said metallic silver layer, each of said transparent layers having a thickness within the range of from about 150 Å to about 500 Å, and said transparent layers being ones which cooperate to



provide the composite film with an integrated solar transmission, α_{eff}, of at least about 0.5 and a ratio of integrated solar transmission to integrated heat reflectivity, $\alpha_{eff}/\epsilon_{eff}$, of at least about 5 where integrated solar transmission (α_{eff}) and integrated heat reflectivity (ϵ_{eff}) are defined as:

$$\alpha_{eff} = \frac{\int_{0.25\ \mu m}^{2.5\ \mu m} Tr(\lambda)A(\lambda)d\lambda}{\int_{0.25\ \mu m}^{2.5\ \mu m} A(\lambda)d\lambda}$$

$$\epsilon_{eff} = \frac{\int_{1.0\ \mu m}^{100\ \mu m} [1 - R(\lambda)]\, W_B(T_B\lambda)d\lambda}{\int_{1.0\ \mu m}^{100\ \mu m} W_B(T_B\lambda)d\lambda}$$

wherein

$Tr(\lambda)$ = Transmission of heat-mirror at wavelength λ

$R(\lambda)$ = Reflectivity of heat-mirror at wavelength λ

$A(\lambda)$ = Solar energy spectrum

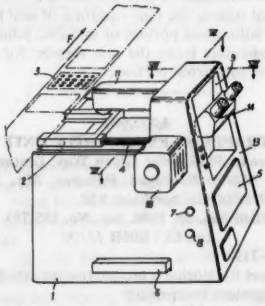
$W_B(T_B,\lambda)$ = Energy distribution for a blackbody at an operating temperature T_B.

4,337,991

LIGHT MICROSCOPE WITH A PLURALITY OF SLIDEWAYS

Alain C. Benajam, Bobigny, France, assignor to Le Materiel Biomedical, Paris, France

Filed Sep. 29, 1980, Ser. No. 191,540
Int. Cl.³ G02B *21/24*
U.S. Cl. 350—87 **3 Claims**



1. Optical microscope comprising: framework means for supporting a plate on which an object to be observed is supported;

a first assembly comprising optical elements for viewing said object;

a second assembly comprising lighting elements for illuminating said object;

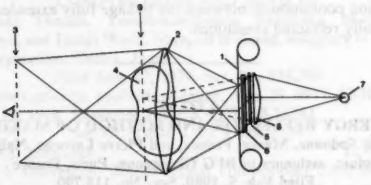
said first and second assemblies being independent from one another, each assembly being provided with reversible mounting slides, said framework means being provided with a plurality of slideways for interchangeably receiving said slides for alternatively mounting said first assembly above or below said object and for alternatively mounting said second assembly on the side of said object opposite from the side on which the first assembly is mounted.

4,337,992

HOLOGRAM MOVIE PROJECTION APPARATUS

Kenneth C. Johnson, 1215 Brewster Dr., El Cerrito, Calif. 94530

Filed Apr. 16, 1980, Ser. No. 140,754
Int. Cl.³ G03H 1/04
U.S. Cl. 350—3.79 1 Claim



1. A means of generating three dimensional moving imagery comprising:

a hologram medium comprising elemental time frame holograms recorded on a hologram film or films as narrow juxtaposed bands oriented transversely to the long dimension of said hologram film(s),

appropriate mechanism whereby said hologram film(s) is (are) drawn across a stationary reference beam or beams, the direction of said drawing to be parallel to the long dimension of said hologram film(s), and whereby moving imagery visible from within a system exit pupil is generated,

first focusing means whereby the portion of said hologram film(s) illuminated by said reference beam(s) is substantially imaged onto said exit pupil, the long dimension of said hologram film(s) being imaged transversely to the normal eye plane,

diffraction means comprising a diffraction grating or gratings, whereby said reference beam(s) is (are) generated by diffraction from a source beam or beams,

zero order stop means, preferably a louvered filter or filters interposed between said diffraction grating(s) and said hologram film(s), whereby the portion of said source beam(s) not diffracted by said diffraction grating(s) is blocked from entering said exit pupil,

a small light source or sources from which said source beam(s) originate(s),

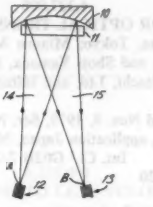
second focusing means interposed either between said light source(s) and said diffraction grating(s), or between said diffraction grating(s) and said hologram film(s), or between said hologram film(s) and said first focusing means, or a combination thereof, wherein said second focusing means without said diffraction means and said hologram medium present would image said light source substantially to a point central to the image, thereby eliminating chromatic dispersion at said point, and thereby causing imagery generated from any said time frame hologram and focused in a designated image plane containing said point to appear motionless as said time frame hologram is drawn across said reference beam.

4,337,993

HOLOGRAPHIC OPTICAL FIBER COUPLER

Rudolf Kompfner, Stanford, Calif., assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 728,915, Oct. 4, 1976, abandoned. This application Nov. 30, 1979, Ser. No. 99,000
Claims priority, application United Kingdom, Oct. 3, 1975, 40593/75
Int. Cl.³ G02B 5/32
U.S. Cl. 350—96.19 9 Claims



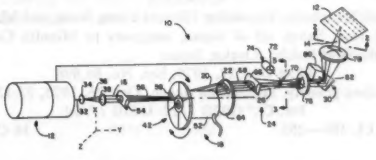
1. An optical system comprising two arrays of optical devices, and means for making individual and simultaneous optical connections each of which involves the passage of light between each selected device of one array and one selected device of the other array to the exclusion of unselected devices, said means comprising at least one phase grating plate in which there are formed a series of volume phase gratings by incidence of complementary reference beams on a holographic medium at different angles, all the phase gratings being of the reflecting type, and the arrangement being such that said individual connections are respectively made via different phase gratings in at least one phase grating plate.

4,337,994

LINEAR BEAM SCANNING APPARATUS ESPECIALLY SUITABLE FOR RECORDING DATA ON LIGHT SENSITIVE FILM

Robert E. Brasier, Carlsbad, Calif., assignor to Datagraphix, Inc., San Diego, Calif.

Filed Jun. 18, 1980, Ser. No. 160,605
Int. Cl.³ G02B 27/17
U.S. Cl. 350—3.71 15 Claims



1. A linear beam scanning apparatus comprising:

(a) means for providing a source of light;

(b) means cooperating with said source for producing therefrom a stationary beam of light along a fixed path, said beam producing means including means for causng said stationary beam to converge to a line in a predetermined plane;

(c) means acting on said stationary beam for producing therefrom a first continuously arcuately scanning beam of light having a particular cross-sectional segment thereof which repeatedly moves from a first point to a second point along an arcuate path in a predetermined plane, said arcuately scanning beam producing means including a flat disc for supporting at least one holographic grating facet and means for supporting said disc for rotation in said predetermined plane and in the path of said stationary

beam such that the latter impinges on and is diffracted by said grating facet for producing said continuously arcuately scanning beam; and

(d) means acting on said first arcuately scanning beam for producing therefrom a second continuously linearly scanning beam of light having a particular cross-sectional segment thereof which repeatedly moves from a first point to a second point along a straight-line path in a second, predetermined plane.

4,337,995

SWITCH FOR OPTICAL TRANSMISSION LINES

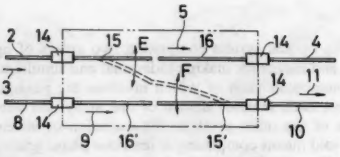
Toshiki P. Tanaka, Tokyo; Minoru Maeda, Hinode; Satoshi Aoki, Akigawa, and Shoji Yamada, Hachiouji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,513

Claims priority, application Japan, Nov. 17, 1978, 53-141166

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **13 Claims**



1. A switch for optical fiber transmission lines which comprises first, second, third and fourth optical fibers, a substrate to which at least parts of each of the first through fourth optical fibers are attached in such a way that an end of at least the first and second optical fibers can be moved relative to said substrate to which they are attached, and means for moving the first and second optical fibers relative to said substrate from one position where the end faces of the first and second optical fibers confront the end faces of the third and fourth optical fibers, respectively, to another position where the end face of the first optical fiber confronts the end face of the second optical fiber.

4,337,996

LENS MOUNT SUPPORT FOR SELF-EXTENDING CAMERA

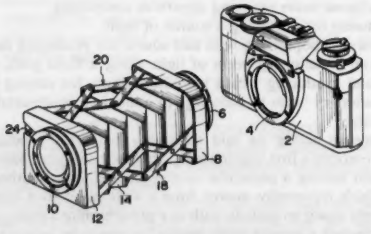
Yoshio Kuramoto, Toyonaka; Hiroshi Ueda, Nara, and Masatoshi Itoh, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1979, Ser. No. 86,898

Claims priority, application Japan, Oct. 26, 1978, 53-132286

Int. Cl.³ G02B *7/22*; G03B *17/04*

U.S. Cl. 350—255 **14 Claims**



1. An extension bellows device detachably mountable on an interchangeable lens camera, comprising:

a camera mount housing to be detachably mounted on said camera;

a lens support housing on which an interchangeable lens is detachably mounted;

a collapsible bellows extending between said camera mount housing and said lens support housing for establishing a light tight chamber between said camera mount housing and said lens support housing;

a support linkage movable between fully extended and fully retracted conditions for movably supporting said lens support housing in parallel relation to said camera mount housing, said support linkage comprising two similar extendable and contractable link assemblies located along two planes substantially normal to each other, each link assembly including a plurality of link bars having overlapping portions movably connected with each other for enabling relative movement of said link bars; and

locking means provided on said support linkage for releasably fastening said overlapping portions of said link bars for releasably locking said support linkage in any condition continuously between the linkage fully extended and fully retracted conditions.

4,337,997

ENERGY REFLECTOR AND METHOD OF MAKING

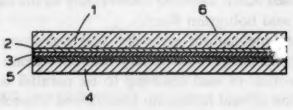
Joseph Sadoune, Massy, France, and Pierre Laroche, Nalinnes, Belgium, assignors to BFG Glassgroup, Paris, France

Filed Feb. 5, 1980, Ser. No. 118,790

Claims priority, application United Kingdom, Feb. 9, 1979, 7904667

Int. Cl.³ G02B *5/10*; C03B *23/04*

U.S. Cl. 350—310 **45 Claims**



1. A flexible radiant energy reflector including a laminate comprising a metal ply, a glass ply having a front face and a rear face and having a thickness between 0.6 and 1.0 mm, means bonding said glass ply over the entire area of its rear face to said metal ply in an inter-ply bond and means associated with one of the plies and providing a radiant-energy reflecting surface, wherein said metal and glass plies are given relative thicknesses and moduli of elasticity such, and said bonding means provides an inter-ply bond of such efficiency, that the rear face of said glass ply is not subjected to tensile stresses when the laminate is flexed, within the elastic limit of said metal ply, to give the front face of said glass ply a concave curvature of a radius of 10 meters.

4,337,998

VARIABLE TRANSMITTANCE WINDOW

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

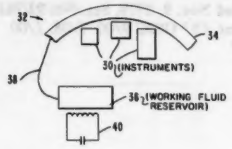
Filed Apr. 15, 1980, Ser. No. 140,528

Int. Cl.³ G02B *5/24*; G05D *25/00*

U.S. Cl. 350—312 **10 Claims**

1. A variable transmittance window for controlling passage of energy therethrough comprising an enclosure positioned in the path of the energy, a reservoir spaced from said enclosure and containing a working fluid which is capable of being transported to and from the window to vary its transmittance, a transport tube coupled between said enclosure and said reser-

voir for transporting said working fluid therebetween, and means for applying and withdrawing thermal energy to and



from said working fluid to transport it between said reservoir and said enclosure.

4,337,999

FLUORESCENT LIQUID CRYSTAL DISPLAY COMPOSITIONS AND DEVICES

Fumiaki Funada, Yamatokooriyama; Masataka Matsuura, Tenri, and Tomio Wada, Nara, all of Japan, assignors to Sharp Corporation, Osaka, Japan

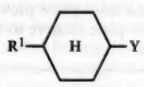
Filed Aug. 17, 1978, Ser. No. 934,349

Claims priority, application Japan, Aug. 29, 1977, 52-104040; May 19, 1978, 53-60358; Jun. 23, 1978, 53-76743

Int. Cl.³ G02F 1/13; C09K 3/34

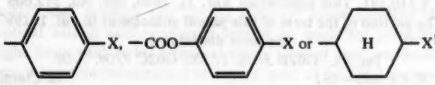
U.S. Cl. 350—345 **12 Claims**

2. A fluorescent liquid crystal composition comprising a liquid crystal material and a coumarin fluorescent dye capable of emitting fluorescence and soluble in said liquid crystal material, said liquid crystal material comprising at least one compound of the formula (I)



(I)

wherein R^1 is alkyl having 3 to 9 carbon atoms, and Y is a group of the formula



X being cyano, alkyl having 3 to 9 carbon atoms, alkoxy having 3 to 9 carbon atoms or alkylcarbonyloxy having 4 to 10 carbon atoms, X^1 being cyano.

4,338,000

ELECTROCHROMIC LIGHT CONTROLLING PANEL

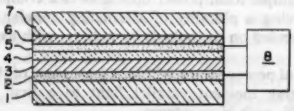
Tadatoshi Kamimori, Tokyo, and Mamoru Mizuhashi, Yokohama, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,124

Claims priority, application Japan, Oct. 25, 1979, 54-137050

Int. Cl.³ G02F 1/17

U.S. Cl. 350—357 **5 Claims**



1. An infra-red reflecting and electrochromic light controlling panel which comprises a first transparent plate (1) made of glass or plastic; a transparent electroconductive film (2); an interlayer film made of a polyelectrolyte; a first tungsten oxide film (4), an infra-red reflecting and electroconductive metal film (5), a second tungsten oxide film (6) and a transparent plate (7) made of glass or a plastic which are laminated in said order; and a device for applying potential between said transparent electroconductive film and said infra-red reflecting and electroconductive metal film whereby light transmission is controlled by applying positive or negative potential to said first tungsten oxide film.

4,338,001

TELEPHOTO LENS SYSTEM

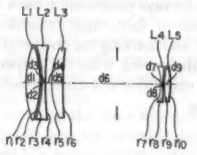
Sei Matsui, Chiba, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,787

Claims priority, application Japan, Jun. 6, 1979, 54/69871

Int. Cl.³ G02B 9/60, 13/02

U.S. Cl. 350—455 **5 Claims**



1. A telephoto lens system having a convergent forward group including a first lens which is a biconvex lens having its surface of greater curvature facing the object side, a second lens which is a biconcave lens having its surface of greater curvature facing the object side, and a third lens which is a positive meniscus lens having its convex surface facing the object side, and a divergent rearward group including a fourth lens which is a concave lens having its surface of greater curvature facing the object side, and a fifth lens which is a biconvex lens, said lens system satisfying the following conditions:

$$0.75f < f_1 < 0.85f \quad \text{(I)}$$

$$0.8f < |f_2| < 1.2f$$

$$0.55f < l < 0.6f$$

$$1 < |r_2/r_3| < 1.1 \quad \text{(II)}$$

$$d_2 < 0.015f$$

$$n_1 < 1.54,\ \nu_1 > 65 \quad \text{(III)}$$

$$n_2 > 1.7,\ \nu_2 < 40$$

$$1.6 < n_3 < 1.7,\ 50 < \nu_3 < 60$$

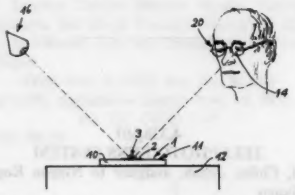
where f_1 represents the focal length of said forward group, f_2 represents the focal length of said rearward group, f represents the focal length of the entire system, l represents the spacing between the principal points of the two groups, r_1–r_{10} represent the curvature radii of the successive lenses, d_1–d_9 represent the center thicknesses and air spaces of the successive lenses, and n_1–n_5 and ν_1–ν_5 represent the refractive indices and Abbe numbers, respectively, of the successive lenses.

4,338,002

METHOD OF DETERMINING THE PROPER INDIVIDUALLY GIVEN POSITIONS OF DIOPTRIC PORTIONS ON EYEGLASSES

Heinz-Joachim Gafert, Breisacher Str. 46, D-7800 Freiburg i.Br., Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,229
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842133
Int. Cl.³ A61B 3/00, 3/10
U.S. Cl. 351—39 5 Claims



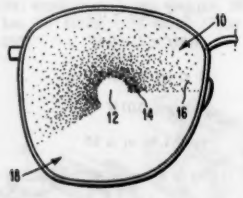
1. A method of determining the proper individually given positions of dioptric portions on eyeglasses, especially on pantoscopic eyeglasses for the close-range positions of the eyes of an examinee, comprising the steps of illuminating the eyes of the examinee by light rays emanating from a source situated at a close-range point to form light-reflection images of the source on the eyes; and marking the course of each straight line connecting the light source with the respective image, at a distance from the respective eye corresponding to that of the respective eyeglass.

4,338,003

ANTI-GLARE SPECTACLES

Werner Adrian, 301 Shakespeare Dr., Waterloo, Ontario, Canada (N2L 2T9)

Filed Jul. 14, 1980, Ser. No. 168,546
Int. Cl.³ G02C 7/10, 7/16
U.S. Cl. 351—45 9 Claims



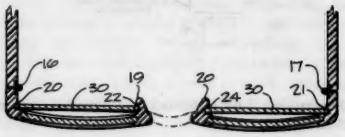
1. Anti-glare spectacles comprising a frame and lenses, wherein each lens comprises a substantially circular central zone of substantially complete transparency, an adjacent light-absorbing annular zone over an angular range of substantially 45° in which the absorption increases sharply from the inside of the annulus and drops towards the periphery by the square of the angle, said angle being that between the viewed object and the center of the source of glare, and an outer zone having a low absorption.

4,338,004

SNAP-IN LENS FOR GLASSES

George W. Vosper, 149 Earl St., Kingston, Ontario, Canada (K7L 2H3)

Filed Nov. 9, 1979, Ser. No. 92,742
Int. Cl.³ G02C 9/00, 7/08, 1/00
U.S. Cl. 351—47 1 Claim



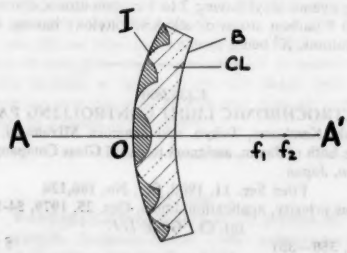
1. In spectacle frames having a nose piece with nose pads on each side thereof that curve rearwardly from the frame, means for mounting a pair of lenses in the frame and a pair of legs each hingedly connected to a stub leg that projects rearwardly from the frame portion that receives the lenses, the improvement comprising a groove in the rearwardly curved nose pads on the side thereof remote from the nose contacting surface and a groove in respective ones of the pair of stub legs, the respective grooves in the nose pads facing respective ones of the grooves in the stub legs for detachably snap fittingly receiving therein respective ones of a pair of resiliently, flexible, coloured transparent plates at a position behind the lens receiving portion of the frame whereby the plates are hidden from the view of other by the frame, a pair of resilient flexible coloured transparent plates, each said plate having a pair of notches in the peripheral edge thereof, one such notch receiving the stub leg portion of the frame and the other providing a ledge bearing against the nose piece preventing upward displacement of the flexible plate relative to the spectacle frame when mounted thereon.

4,338,005

MULTIFOCAL PHASE PLACE

Allen L. Cohen, 10108 Windsong Terrace, Richmond, Va. 23233

Continuation-in-part of Ser. No. 970,751, Dec. 18, 1978, Pat. No. 4,210,391. This application Apr. 21, 1980, Ser. No. 142,005
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.
Int. Cl.³ G02B 3/08, 17/00; G02C 7/04, 7/06
U.S. Cl. 351—161 12 Claims



1. A multiple focal power optical device comprising: body means having a plurality of alternating annular, concentric zones, bounded on the outside by radii r_n, with n=1, 2, 3, . . . ;

first focal power means within at least some of the zones for directing incident parallel light to a first focal point +d/N, with N an integer;

second focal power means within at least some of the zones for directing incident parallel light to a second focal point −d/N;

wherein the radii r_n of said zones are substantially proportional to the square root of n;

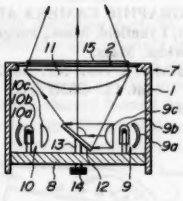
and wherein the absolute value of r_1 is set equal to $\sqrt{\lambda d}$, with λ equal to the wavelength under consideration, and d is chosen arbitrarily.

4,338,006

OVERHEAD PROJECTOR

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Jan. 15, 1980, Ser. No. 112,353
Claims priority, application Japan, Jan. 17, 1979, 54-4095
Int. Cl.[3] G03B *21/20, 21/132*
U.S. Cl. 353—85 2 Claims



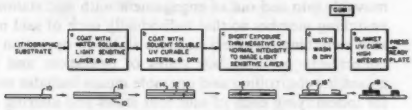
1. An overhead projector comprising a projector body having a housing with a plurality of light source systems disposed in a light source plane therein, a condenser lens disposed at a level above the plane and having an optical axis perpendicular to the light source plane, a stage glass attached to said housing so as to close a top opening of said housing, a projecting lens disposed outside said housing at a point above said stage glass, a projecting reflective mirror reflecting light coming through said projecting lens toward a screen, and a light-upward-directing reflective mirror disposed in the light source plane within said housing and having a mirror plane crossing the optical axis of said condenser lens at an angle for reflecting light from said light source systems toward said condenser lens, elements constituting at least a part of said light source systems being radially disposed around said optical axis of the condenser lens so that optical axes of said light source systems intersect at a point on said optical axis of the condenser lens, said light-upward-directing reflective mirror and said part of the light source systems being movable relative to each other, and said projecting lens being vertically movable and being replaceable, wherein said light source systems are fixed and said light-upward-directing reflective mirror is located on and rotatable about the axis of said condenser lens, each of said light source systems comprising a concave reflective mirror, a light source lamp of a given luminous intensity, and a light source lens of a given focal length, wherein said given luminous intensity of each said light source lamp differs from the given luminous intensities of the other said light source lamps, and said given focal length of each said light source lens differs from the given focal lengths of the other said light source lenses, the light-upward-directing reflective mirror being rotatable about the axis of said condenser lens to direct light from any one of said light source systems upwardly to said condenser lens, whereby said projector is selectably usable for different sizes of transparent positive film slides and projects an image of substantially fixed magnitude and constant brightness throughout the screen, regardless of the size of the transparent positive film slide placed on the projector.

4,338,007

APPARATUS AND PROCESS FOR MAKING LITHOGRAPHIC PRINTING PLATE WITH REINFORCED IMAGE

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06880, and Robert F. Gracia, Scituate, Conn., assignors to Howard A. Fromson, Weston, Conn.

Continuation of Ser. No. 972,561, Dec. 22, 1978, abandoned.
This application Apr. 21, 1980, Ser. No. 142,507
Int. Cl.[3] G03B *27/30;* B41M *5/00;* G03F *7/02;* G03C *1/76*
U.S. Cl. 355—100 2 Claims


LITHOGRAPHIC SUBSTRATE
COAT WITH WATER SOLUBLE LIGHT SENSITIVE LAYER & DRY
COAT WITH SOLVENT SOLUBLE UV CURABLE MATERIAL & DRY
SHORT EXPOSURE THRU NEGATIVE OF NORMAL INTENSITY TO IMAGE LIGHT SENSITIVE LAYER
WATER WASH & DRY
BLANKET UV CURE HIGH INTENSITY
PRESS READY PLATE

1. Apparatus for making a lithographic printing plate which comprises:

(a) means for applying a water soluble light sensitive coating to a lithographic plate and for applying a coating of a solvent soluble UV curable material thereover;

(b) means for exposing to actinic light the lithographic plate having the water soluble light sensitive layer thereon and the overcoating of a solvent soluble UV curable material, the intensity of said means being sufficient to form an image in the light sensitive layer and to adhere the image to the overlying portions of the UV curable material without curing the UV curable material;

(c) means for developing the plate with water to remove light sensitive layer and overlying UV curable material in the non-image area; and

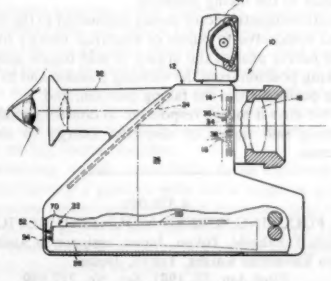
(d) means for exposing the plate to a UV source having an intensity greater than the imaging light means of paragraph (b), said UV source having an intensity sufficient to cure the UV material to form a press-ready plate having a durable, reinforced cured image thereon.

4,338,008

SWITCHING ARRANGEMENT FOR AUTOMATICALLY EFFECTING SELECT PHOTOGRAPHIC FUNCTIONS

Donato F. Pizzuti, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 9, 1980, Ser. No. 214,476
Int. Cl.[3] G03B *7/24*
U.S. Cl. 354—21 7 Claims



1. In a photographic apparatus having means operable for effecting a photographic function, means for defining a receiving chamber capable of removably receiving one of a plurality of selectively dimensioned film containers, means associated with said chamber for sensing different coding arrangements carried on the containers, the coding arrangement being indicative of a particular characteristic of the film contained within

the container, and means responsive to said sensing means for controlling said operable means so as to effect a select photographic function corresponding to the characteristic of the film, the improvement wherein:

said sensing means includes a plurality of sensing arrangements operable between different sensing states, which number of states is in excess of the number of sensing arrangements, responsive to different coding arrangements on respectively different film containers; and

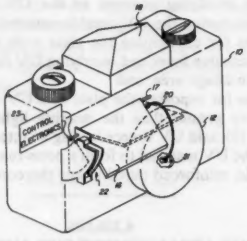
said sensing arrangements include a stationary switching member and a pair of movable switching members, each of said movable switching members being independently movable into and out of engagement with said stationary switching member so that individually each of said movable switching members has two states of operation and collectively provide four states of operation, and said means for controlling said operable means includes means for indentifying each of said four states and altering said photographic function in accordance therewith.

4,338,009

BISTABLE ACTUATING MECHANISM FOR OPTICAL APPARATUS

James K. Lee, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,151
Int. Cl.³ G03B *19/12*
U.S. Cl. 354—152 **5 Claims**



1. In a reflex camera having a viewing mirror moveable about an axis between a viewing position and a taking position, a mirror actuating mechanism, comprising:

a. bistable toggle means for (1) urging the mirror toward the viewing position when closer to the viewing position, and (2) urging the mirror toward the taking position when closer to the taking position;

b. electromagnetic motor means connected to the mirror axis and responsive to pulses of electrical energy for moving the mirror against the urging of said toggle means to the taking position from the viewing position and to the viewing position from the taking position; and

c. drive circuit means responsive to control signals for supplying said pulses of electrical energy to said motor means.

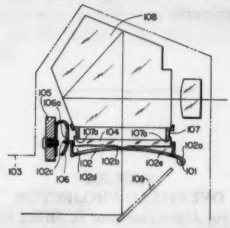
4,338,010

FOCUSING SCREEN MOUNTING DEVICE

Norimichi Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1981, Ser. No. 227,559
Claims priority, application Japan, Feb. 14, 1980, 55-17483[U]
Int. Cl.³ G03B *13/00, 19/12*
U.S. Cl. 354—152 **5 Claims**

1. A focusing screen mounting device for a camera for positioning a focusing screen below a pentaprism comprising: a focusing screen holder secured with a hinge at a rear portion thereof, said focusing screen holder having a locking member at a front portion thereof, said focusing screen being replacable through a camera body mounting opening by releasing said locking member, and at least two entire sides of said focusing



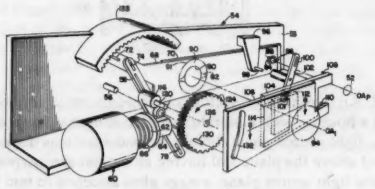
screen holder being flexible to urge said focusing screen towards said pentaprism.

4,338,011

PHOTOGRAPHIC CAMERA APPARATUS

Donato F. Pizzuti, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 3, 1981, Ser. No. 240,003
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—196 **23 Claims**



1. Photographic camera apparatus for use in a camera of the type having means for facilitating the positioning of film in a plane for exposure and an optical path along which light from a scene can travel to expose the film, said apparatus comprising:

blade apparatus;

means for mounting said blade apparatus for displacement between a first arrangement in which said blade apparatus blocks scene light from traveling along the camera optical path thereby precluding scene light from reaching the film plane and a second arrangement in which said blade apparatus unblocks the camera light path, said blade apparatus being structured to define an aperture, aligned with the camera optical path, which varies in size in a predetermined manner during displacement of said blade apparatus between its first and second arrangements,

drive means actuable for displacing said blade apparatus between its first and second arrangements to define an exposure interval;

variable focus optical means structured to continuously focus scene light from a predetermined range of subject distances onto the film plane, said optical means comprising a pair of optical elements having refractive surfaces configured such that changes in focus are effected by displacing said elements relative to one another in a direction transverse to the optical axes of said elements; and

means for coupling said optical means with said blade apparatus so that said optical means changes focus in a predetermined manner in response to the displacement of said blade apparatus between its first and second arrangements, said coupling means and said blade apparatus cooperating so that said optical means focuses at predetermined

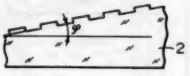
subject distances for predetermined sizes of said blade apparatus aperture.

4,338,012

FOCUSING SCREEN

Susumu Matsumura, Kawasaki; Takashi Suzuki, Yokohama; Kazuya Matsumoto, Yokohama, and Kikuo Momiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 204,009
Int. Cl.³ G02B *5/04;* G03B *13/28*
U.S. Cl. 354—200 **19 Claims**



1. In a split-image type range finder system having an objective lens for forming an image plane, a focusing screen comprising:

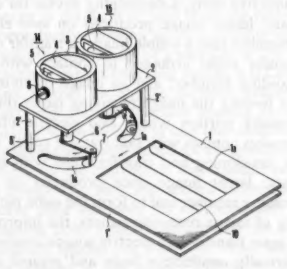
a plurality of light deflecting portions in each of which members of prism-like unit structure are arranged with a period "P" in a direction different from the other, said prism-like unit structure, in the cross-section thereof, having the surface thereof formed by a plurality of inclined surfaces having different angles of inclination with respect to the image plane, said period "P" being greater than 10 μm and less than 50 μm.

4,338,013

ELECTROMAGNETICALLY DRIVEN SHUTTER

Fumio Shimada, and Nobuaki Date, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Jan. 5, 1981, Ser. No. 222,736
Claims priority, application Japan, Jan. 10, 1980, 55-1568
Int. Cl.³ G03B *9/08;* H02K *33/16, 33/18;* H01F *7/14*
U.S. Cl. 354—234 **6 Claims**



1. An electromagnetically driven shutter, comprising:

shutter blades capable of reciprocative movements between positions to start running for an exposure and positions to complete running;

electromagnetic driving sources of a reciprocative rotating type for actuating the shutter blades, said driving sources having stators and rotors coupled with the shutter blades; and

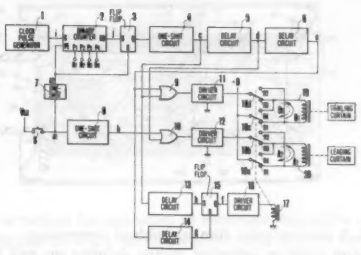
magnetic members positioned on the stators to face positions of the rotors corresponding to the positions of the shutter blades to start running for holding the rotors at said positions with the attracting power between the rotors and the magnetic members, said magnetic members being operable for regulating gaps between themselves and the rotors.

4,338,014

ELECTROMAGNETICALLY DRIVEN SHUTTER

Syozo Yoshida, Machida, and Yoichi Tosaka, Shakujii, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1980, Ser. No. 153,860
Claims priority, application Japan, May 29, 1979, 54-67161
Int. Cl.³ G03B *9/08*
U.S. Cl. 354—234 **5 Claims**



1. An electromagnetically driven shutter apparatus for a camera comprising:

(a) a leading shutter member and a trailing shutter member;

(b) a first electromagnetic device for driving the leading shutter member, said device having a first electromagnetic coil;

(c) a second electromagnetic device for driving the trailing shutter member, said device having a second electromagnetic coil;

(d) first and second changeover switches connected to one end and an opposite end of said first electromagnetic coil, said first and said second changeover switches being switchable between a first position in which said first electromagnetic coil can be supplied with electric current flowing in one direction therethrough to effect movement of said leading shutter member for an exposure purpose, and a second position in which said first electromagnetic coil can be supplied with electric current flowing in an opposite direction therethrough to effect return movement of said leading shutter member;

(e) third and fourth changeover switches connected to one end and an opposite end of said second electromagnetic coil, said third and fourth changeover switches being switchable between a first position in which said second electromagnetic coil can be supplied with electric current flowing in one direction therethrough to effect movement of said trailing shutter member for completion of an exposure, and a second position in which said second electromagnetic coil can be supplied with electric current flowing in an opposite direction to effect return movement of said trailing shutter member;

(f) connecting means connectable to an electrical power source having a positive pole and a negative pole, said connector means being arranged for connecting the positive pole to said first and said third changeover switches, and connecting the negative pole to said second and said fourth changeover switches; and

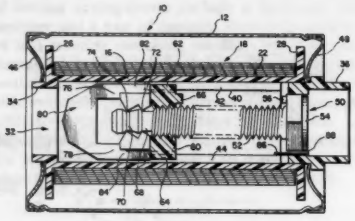
(g) a circuit arrangement, said circuit arrangement including an electromagnetic relay for controlling the movement of said changeover switches from one of said positions to the other and a control circuit responsive to the completion of an exposure for causing said relay to move the changeover switches to the second position after completion of an exposure and thereafter moving all of said changeover switches to the first position.

4,338,015

35 MM CASSETTE WITH FILM REWIND LIMIT, EXPOSURE INDICATOR, AND FILM RELEASE

William A. Holmes, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 3, 1981, Ser. No. 240,014
Int. Cl.³ G03B *17/26*; B65H *75/28*
U.S. Cl. 354—275 **22 Claims**



20. A photographic film assemblage comprising:

a film cassette including means defining an exit through which a strip of film may pass;

means for supporting a strip of film, said supporting means being rotatably supported within said film cassette;

a strip of film coiled about said supporting means with a first end thereof being adapted to extend to the exterior of said film cassette via said exit and a second end thereof releasably coupled to said supporting means;

exposure indicating means mounted for movement between a first position which indicates that said strip of film has not been completely exposed, and a second position which indicates that said strip of film has been completely exposed; and

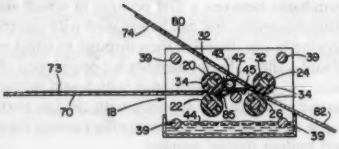
means, responsive to the uncoiling of said strip of film during exposure thereof, for moving said exposure indicating means into said second position subsequent to the last frame in said strip of film being exposed.

4,338,016

DIFFUSION-TRANSFER PROCESSOR

Gene E. Peck, Sun Valley, and Bruce Cooperberg, North Hollywood, both of Calif., assignors to Insta-Print, Incorporated, North Hollywood, Calif.

Filed Jun. 29, 1981, Ser. No. 278,723
Int. Cl.³ G03B *9/00*
U.S. Cl. 354—303 **15 Claims**



1. An improved diffusion-transfer processor for photomechanical reproduction of artwork and like mediums, comprising:

a first pair of rollers positioned in parallel engagement with each other, and adapted to receive a negative paper;

a second pair of rollers positioned in parallel engagement with each other, and spaced rearwardly of said first pair of rollers, said second pair of rollers being adapted to receive said negative paper and a receiver paper simultaneously therebetween;

means for continuously supplying an activator solution so as to bathe said negative and receiver papers in said activator solution, prior to said papers passing between said second pair of rollers;

a first drive means coupled to at least one of said rollers of said first pair of rollers;

a second drive means coupled to at least one of said rollers of said second pair of rollers; and

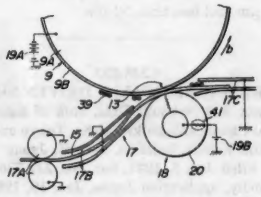
means connected to said second drive means to control the starting time of said second drive means relative to the starting of said first drive means, whereby said negative and said receiver papers will engage in a selected alignment with each other.

4,338,017

ELECTROPHOTOGRAPHIC APPARATUS

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jan. 9, 1981, Ser. No. 223,692
Claims priority, application Japan, Feb. 7, 1980, 55/13052
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 TR **3 Claims**



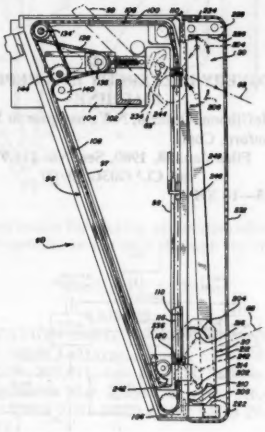
1. In an electrophotographic apparatus comprising an electric charge holding member supported by at least an electrically conductive body, a developing device for developing an electrostatic latent image produced on said electric charge holding member into a visible image, a transfer device including a transfer roller arranged in contact with said electric charge holding member, and an image receiving paper feed means for feeding the image receiving paper through a toner image transfer portion where said electric charge holding member makes contact with said transfer roller, and operative to repeat developing and transfer steps with respect to the electrostatic latent image once produced on said electric charge holding member and to form the same picture image on a plurality of image receiving papers, the improvement comprising a main transfer bias electric source connected between said electrically conductive body and ground and having a terminal for applying a bias voltage having a polarity which is the same as a toner charging polarity to said electrically conductive body, an auxiliary transfer bias electric source connected between said transfer roller and ground and having a terminal for applying a bias voltage having a polarity which is opposite to the toner charging polarity, and an image receiving paper feed path member for constituting said image receiving paper feed means, at least one portion of said image receiving paper feed path member being connected to ground, whereby said transfer bias voltage is automatically lowered when the resistance value of said image receiving paper is decreased due to its humid absorption property under a high humid condition or the like so as to prevent an undesirous electric charge from injecting onto a non-picture image portion of said electrostatic latent image.

4,338,018

LIGHT SCANNING ASSEMBLY FOR ELECTROPHOTOGRAPHIC PRINTING PLATE MAKING APPARATUS

Manfred R. Kuehnle, New London, N.H., and James C. Compton, Marlborough, Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Filed Apr. 11, 1980, Ser. No. 139,465
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 17 Claims



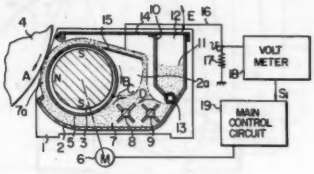
1. In apparatus, including a chassis enclosure in which a copyboard and a platen is arranged, for producing a toned image on an electrophotographic member carried by the platen for the purpose of making said member into a graphic arts printing plate directly from a pattern carried by the copyboard, the electrophotographic member being mountable on the platen with the photoconductive coating surface exposed, the copyboard being arranged for progressive illumination thereacross cooperating with a fixed optical system for directing radiant energy in the form of light from the pattern to the exposed photoconductive coating surface continuously and in synchronism with the movement of a carriage in one direction wherein the carriage carries charging means, a slit and toning means arranged in that order, the carriage constructed to obstruct the exposed photoconductive coating surface from said radiant energy when moving in said one direction but for the slit; light scanning assembly means for progressively illuminating the pattern on the copyboard with radiant energy; the improvement comprising first and second illuminating lamp means, a bracket plate assembly for mounting said first and second illuminating lamp means transverse to the copyboard superposed, aligned, spaced one above the other and in scanning condition relative to the pattern carried by said copyboard and drive means for progressively moving said bracket plate assembly and lamp means synchronously with the carriage, each said lamp means having reflector means associated therewith and arranged in relationship thereto so as to form a beam of radiant energy directed toward the said pattern, the pair of resulting beams intersecting at the pattern for illuminating same, said lamp and reflector means being pivotably mounted for limited rotation along a predetermined arc during movement of said assembly and lamp means transverse the pattern whereby to maintain the intersecting relationship for the full traversal of said copyboard, with the beam of radiant energy formed thereby directed along a line of sight which is the shortest distance from the lamp to the said central axis continuously intersecting the same point on the central axis of the fixed optical system throughout travel of said assembly across the copyboard.

4,338,019

METHOD FOR OPERATING ELECTROPHOTOGRAPHIC COPYING APPARATUS

Isamu Terashima; Shigeru Uchida, and Eiiji Senba, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 20, 1980, Ser. No. 208,580
Claims priority, application Japan, Nov. 26, 1979, 54/151972
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 D 7 Claims



1. In a method for operating an electrophotographic copying apparatus having a latent image forming unit for forming an electrostatic latent images on a recording medium, a development unit for visualizing the electrostatic latent image with a developer containing toner and carrier to produce a visible toner image, and a fixing unit for fixing the toner image, said method comprising the steps of:

racing said development unit prior to the normal developing operation until the amount of charge on the toner in the developer reaches a predetermined level; and

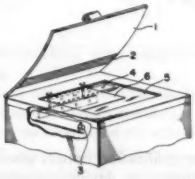
thereafter commencing the electrophotographic copying procedure.

4,338,020

DEVICE FOR DETECTING THE SIZE OF THE MATERIAL TO BE COPIED IN COPYING MACHINES

Koji Yukawa, Hachioji; Masayuki Miyazaki, Tam, and Takashi Murahashi, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 172,821
Claims priority, application Japan, Aug. 1, 1979, 54-97400
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—41 8 Claims



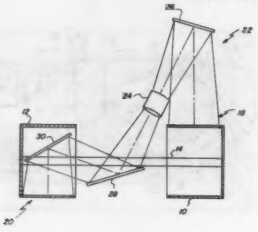
1. A device for determining the size of an original or material to be copied in the copying machine so that appropriately sized transfer paper can be selected and fed in the copying machine comprising a colored member having a certain color and which is used as means for detecting the size of the original; a light emitting member for throwing light upon the colored member; and a light receiving member responsive to said certain color for receiving light which has impinged upon the colored member; whereby at least a part of the light irradiated from the light emitting member to the light receiving member is intercepted by the original placed on the copy board so as to cause the light receiving member to provide an output signal indicative of the size of the original.

4,338,021

IMAGING APPARATUS

Pierce B. Day, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,086
Int. Cl.³ G03B *27/48*
U.S. Cl. 355—49 **4 Claims**



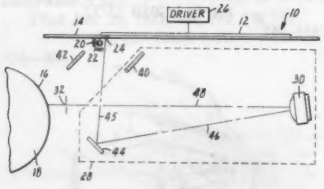
1. A migration imaging copier/duplicator comprising:
a document drum having a generally cylindrical outer surface for receiving a document to be copied;
a transparent imaging drum having a generally cylindrical outer surface;
a shaft coupled to said document drum and said imaging drum for simultaneously rotating said drums, said drums being coaxial with each other and with said shaft; and
an optical system for imaging a rectangular area of a document on the document drum through the imaging drum and onto the outer surface of the imaging drum, the optical system being offset from the shaft so that the shaft is outside the path of the principal light rays through the optical system.

4,338,022

MULTIPLE MAGNIFICATION OPTICAL ASSEMBLY

Laszlo D. Farago, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 22, 1980, Ser. No. 218,846
Int. Cl.³ G03B *27/50, 27/70*
U.S. Cl. 355—60 **4 Claims**



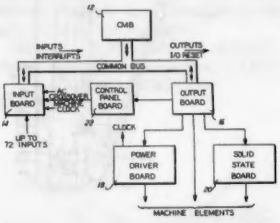
1. A variable magnification optical assembly for use in a scanning type reproduction device comprising:
a housing member having an object window and an image window fixed thereon;
a carriage member;
means mounting said members for relative linear movement between a first and a second position; and
light path means for defining a first light path between said windows when said members are in their first position, and for defining a second light path between said windows when said members are in their second position; said first light path and said second light path having different magnification ratios and having a common light path portion; and light path means comprising a reflex lens fixed on said carriage member and positioned to receive and reflect light along said common light path portion in both of said positions, and a plurality of mirrors comprising a first mirror mounted on said carriage, and a second mirror mounted on said housing, said first mirror being spaced from said first light path when said members are in their first relative position, and intercepting said first light path to direct light along said second light path via said second mirror when said members are in said second position.

4,338,023

JOB RECOVERY HIERARCHY IN A REPRODUCTION MACHINE

Gary M. McGibbon, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1980, Ser. No. 115,970
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH **11 Claims**



1. In a reproduction machine having resources including a processor, a main tray paper feeder, a recirculating document handler tray, a duplex tray, an output tray and a control, a method of job recovery comprising the steps of
detecting malfunctions,
determining the resources affected by the malfunction,
deciding a recovery procedure to minimize loss of copy sheets related to the resources
pointing to an appropriate boundary,
recovering from the malfunction and continuing operation.

4,338,024

FLOW ANALYZER AND SYSTEM FOR ANALYSIS OF FLUIDS WITH PARTICLES

Gunner Bolz, Del Mar, and Sherman E. DeForest, Encinitas, both of Calif., assignors to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed May 2, 1980, Ser. No. 146,064
Int. Cl.³ G01N *33/48, 21/05*
U.S. Cl. 356—23 **16 Claims**

1. Apparatus for analysis of particles in a fluid which comprises
a flow chamber having an inlet and an outlet and shaped to convey fluid from the inlet to the outlet with particles in the fluid suspended in a path, a portion of said path having a width substantially greater than its thickness;
said path shaped to convey said fluid such that said particles are aligned in the flow stream substantially with their minimum cross-sectional area extended transverse to their direction of flow and their maximum cross-sectional area extended substantially parallel to said width;
microscopic means adapted to be focused on the path includ-

ing an area of the path substantially greater than the area of the largest of the particles, and

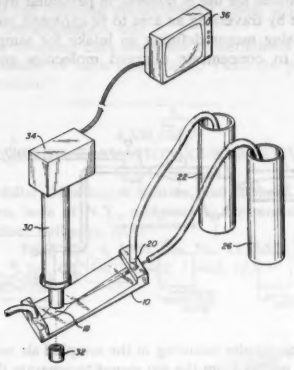


image pick-up means for picking up substantially still frame images of particles in the path through the microscopic means.

4,338,025

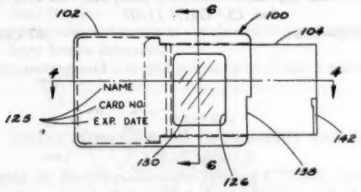
IDENTIFICATION CARD, SENSOR, AND SYSTEM

Elton D. Engel, 34005 LaMoyne, Livonia, Mich. 48154

Division of Ser. No. 895,011, Apr. 10, 1978, Pat. No. 4,202,120. This application Mar. 3, 1980, Ser. No. 126,409

Int. Cl.³ G06K *9/00;* **B42D** *15/02;* **G03B** *23/00*

U.S. Cl. 356—71 **1 Claim**



1. In a thumbprint or fingerprint identification system wherein a user first manually associates his own identification card with a sensor assembly to initiate an identification transaction and then places his thumbprint or fingerprint on a transparent area of the card so that the sensor can scan the print, the improvement comprising means for preventing the user from disassociating the card from the sensor until the residual print is wiped from the transparent area.

4,338,026

APPARATUS FOR DETERMINING PROPERTIES OF MATTER

Wolfgang N. Garwoli, North Balwyn, Australia, assignor to The State of Victoria, Victoria, Australia

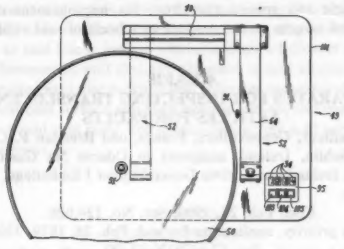
Filed Oct. 9, 1979, Ser. No. 83,108

Claims priority, application Australia, Oct. 9, 1978, PD6290; Oct. 9, 1978, PD6291; Oct. 9, 1978, PD6292; Oct. 9, 1978, PD6293

Int. Cl.³ G01B *11/04, 11/08*

U.S. Cl. 356—73 **9 Claims**

1. Apparatus for scanning and measuring physical characteristics of a plant root sample comprising a scanning zone in which the root sample, which has been cut indiscriminantly into discrete lengths, may be uniformly distributed and randomly orientated; scanning means; transport means for producing relative movement between said scanning zone and said scanning means, said transport means defining a substantially spiral primary scan path between said scanning zone and said scanning means, said scanning means including at least one irradiation means arranged to irradiate a portion of said scanning zone, and at least one radiation detector responsive to the



irradiation from said irradiation means for producing an output indicating the presence or otherwise of a discrete length of root in said portion; and processing means for processing the output of said detector to provide a measure of at least one characteristic of the sample.

4,338,027

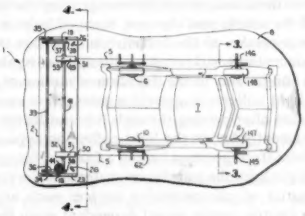
LINE OF SIGHT WHEEL ALIGNMENT APPARATUS FOR VEHICLES

Leonard F. Eck, McPherson, Kans., assignor to Kansas Jack, Inc., McPherson, Kans.

Continuation-in-part of Ser. No. 940,823, Sep. 8, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 84,873

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—155 **28 Claims**



1. Apparatus for checking wheel alignment of a wheeled vehicle comprising:

(a) a base structure having a surface supporting a wheeled vehicle for alignment checks thereof;

(b) target structure mountable on the wheels of a vehicle and having scaled targets located thereon in diametrically opposed relation and laterally outwardly of the wheels;

(c) laterally spaced laser beam projecting members spaced longitudinally from and aligned with the target structure and spaced generally laterally from the longitudinal axis of the vehicle;

(d) a support structure for said laser beam members having spaced apart standards and a shaft member extending therebetween; said shaft having spaced arms;

(e) means rotatably mounting said spaced arms on said standards with said shaft radially outwardly from said rotatable mounting means;

(f) means adjustably rotating said arms for raising and lowering said arms and the shaft thereon to vary the spacing from the base surface;

(g) means pivotally mounting the shaft on the arms for ad-

justing the angle of said laser beams relative to the base surface;

(h) means movably mounting the laser beam members on the shaft for adjusting the lateral spacing thereof; and

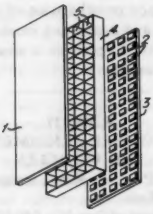
(i) means for positioning the vehicle and laser beam members relative to the base surface for the laser beam members to project laser beams parallel to the longitudinal axis of said vehicle and spaced therefrom for impingement on the scaled targets on the respective wheels of said vehicle.

4,338,028

APPARATUS FOR INSPECTING TRANSLUCENT ARTICLES FOR FAULTS

Andre Tailleur, Gennevilliers, France, and Brendan F. O'Connor, Dublin, Ireland, assignors to Udaras Na Gaeltachta, Furbo, Ireland and Societe Generale pour l'Emballage, Paris, France

Filed Feb. 25, 1980, Ser. No. 124,020
Claims priority, application Ireland, Feb. 26, 1979, 320/79
Int. Cl.³ G01N *21/90*
U.S. Cl. 356—240 **11 Claims**



1. In an apparatus for detecting the presence of faults in an article of translucent material, the apparatus comprising means for generating a spot beam of light and causing it to repeatedly scan in a first direction, means for transporting the translucent material of the article past the spot beam of light in a second direction non-parallel to the first direction so that the surface of the translucent material is repeatedly scanned by the beam in a direction non-parallel to the direction of motion of the material, and a light collection apparatus arranged to receive light from the beam after passing through the translucent material, the improvement wherein the light collection apparatus comprises a light-diffusing screen having a front surface positioned to receive light from the translucent material and a rear surface facing a matrix of photosensitive devices each arranged to provide an electric output signal dependent upon the amount of light emerging substantially only from the rear surface of a respective elemental area of the screen, the apparatus further comprising electrical circuit means for detecting substantially non-occlusive refractive faults in the article by selectively examining different combinations of the output signals of the photosensitive devices in dependence upon the position of the beam.

4,338,029

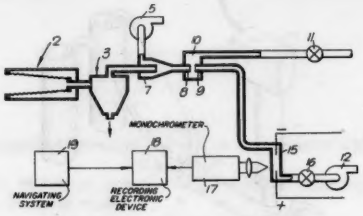
MINERAL EXPLORATION

Denis J. C. Macourt, 73 Dickson Ave., Artarmon, New South Wales, Australia

Filed Nov. 28, 1978, Ser. No. 964,121
Int. Cl.³ G01N *21/62, 31/12, 33/24*
U.S. Cl. 356—311 **21 Claims**

1. A method of mineral exploration which comprises the steps of: traversing an area to be explored; sampling atmospheric air while conducting such tranverse; separating charged molecules and charged clumps of molecules from such sampled air; determining the extent to which substances indicative of a mineral deposit are present in such charged molecules and charged clumps of molecules and determining whether such substances are present to an anomalous extent indicative of a mineral deposit.

15. Apparatus for use in mineral, in particular hydrocarbon, exploration by traversing an area to be explored, such apparatus comprising means defining an intake for sampling air; a centrifuge to concentrate charged molecules and charged



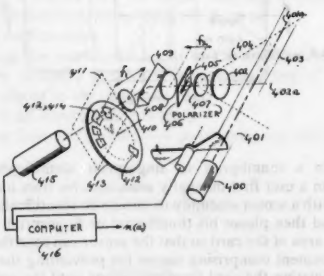
clumps of molecules occuring in the sampled air and to reject extraneous matter from the air; means to separate the concentrated charged molecules and charged clumps of molecules from such sampled air; and means for determining the extent to which substances indicative of a mineral deposit are present in such charged molecules and charged clumps of molecules.

4,338,030

DISPERSIVE INSTRUMENT FOR MEASUREMENT OF PARTICLE SIZE DISTRIBUTIONS

Hendricus G. Loos, 3019 Cresta Way, Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 919,281, Jun. 26, 1978, Pat. No. 4,245,909, and a continuation-in-part of Ser. No. 113,673, Jan. 21, 1980. This application Mar. 18, 1980, Ser. No. 131,414
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **47 Claims**



1. A method for measurement of the size distribution of particles suspended in a gas or a liquid, comprising:

passing into the particle suspension an illuminating beam comprising a substantially collimated beam of substantially white light;

with a lens collecting part of the light scattered by the particles;

passing the collected light through a slit in an opaque screen located in the focal plane of said lens;

passing the light transmitted by said slit through a dispersive element such as to produce, in the exit plane of the dispersive element, a spectral decomposition in a direction perpendicular to said slit, and such that a monochromatic point source in said slit produces a sharp image in said exit plane;

sequentially placing the members of a set of spatial filters in an image window located in said exit plane;

collecting the light transmitted by each of said spatial filters sequentially by a photodetector to produce a signal sub-

stantially proportional to light transmitted by respective filters;

acting on the resulting photodetector signal sequence by a linear transformation; and

using the resulting data sequence a coefficients in a linear combination of basis functions to yield the particle size distribution.

4,338,031

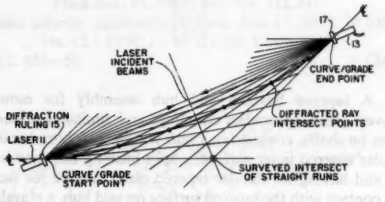
LASER GRADE, ELEVATION, CURVE SURVEYING SYSTEM

John M. Miller, Huntington Station, and Richard O. Barton, Levittown, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,367

Int. Cl.³ G01B *9/02, 11/02, 11/26*

U.S. Cl. 356—356 **8 Claims**



1. A laser surveying method for defining the path of a curved track, said method comprising:

projecting a first diffracted fan of laser beams from a first point along the track,

projecting a second diffracted fan of laser beams from a second point along the track as to traverse said first fan of laser beams,

marking selected points at which said first and second fans of laser beams intersect,

connecting said selected points as to define a curved track.

4,338,032

DETECTION OF FAULTS IN SHEET AND LIKE MATERIALS

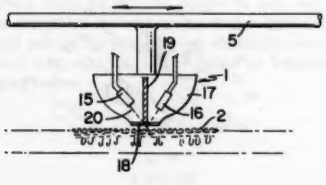
Harold B. Bardsley, Euxton; Edward C. Lear, Turton, near Bolton, and J. Robert Jones, Chadderton, all of England, assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Jan. 31, 1980, Ser. No. 117,019

Claims priority, application United Kingdom, May 18, 1979, 7917452

Int. Cl.³ G01N *21/19*

U.S. Cl. 356—431 **6 Claims**



1. Apparatus for detecting faults in an advancing sheet of fabric material comprising a radiation transmitter, means mounting said transmitter for directing radiation at one surface of said material, a plurality of detectors sensitive to the radiation transmitted by said transmitter for generating an electrical output representative thereof, mounting means including a support carrying said detectors for receiving radiation from said material, rigid cam drive means for drivingly oscillating said support a predetermined distance continuously in a linear path in a first transverse direction relatively to the direction of advancement of the material and then in the reverse direction, and monitoring means connected to said detectors for monitoring said electrical output to detect deviations from a norm, said cam drive means comprising a cam plate constrained for linear movement and a follower channel including first and second opposed cam surfaces, said surfaces being substantially transverse to said linear path, a rotatable disc, a follower eccentrically fastened to said disc and disposed in said channel, means for rotating said disc to force said follower successively against said first cam surface and then against said second cam surface to drive said cam plate, and means connecting said cam plate to said support.

4,338,033

DENSITOMETER

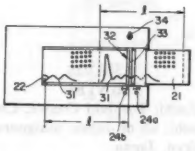
Yutaka Kato, Tamo, and Ryo Fujimori, Hachiouji, both of Tokyo, Japan, assignors to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 2, 1980, Ser. No. 155,383

Claims priority, application Japan, Jun. 8, 1979, 54-78001[U]

Int. Cl.³ G01N *21/01; G01J 1/42*

U.S. Cl. 356—444 **1 Claim**



1. A densitometer comprising a recorder so adapted as to be capable of recording two analog densitograms on the basis of a single set of analytical data at a definite recording interval, an index arranged at a position apart by a distance equal to said recording interval from the recording pen of said recorder, a first pushbutton for setting boundary point on said analog densitogram recorded for the second time and a second pushbutton for commanding erasure of boundary point on said analog densitogram, said densitometer being so adapted as to process analytical data while processing a point as a boundary point when the first pushbutton is depressed the moment that said point becomes coincident with said index and while erasing a valley on said densitogram traced for the second time when said second pushbutton is depressed before said valley on the first densitogram becomes coincident with said index.

4,338,034

PRINT WHEEL POSITIONING MEANS

Egon S. Babler, Northbrook, Ill., assignor to Xerox Corporation, Stamford, Conn.

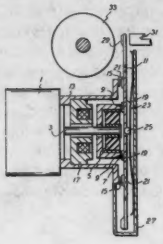
Filed Apr. 18, 1980, Ser. No. 141,445

Int. Cl.³ B41J *1/24*

U.S. Cl. 400—144.2 **4 Claims**

1. A print wheel aligning apparatus comprising a print wheel mounted for rotation, said print wheel having coarse alignment means and fine alignment means thereon, drive means for rotating said print wheel, said drive means mounted for movement into and out of contact with said coarse alignment means, means for moving said drive means into and out of contact with said coarse alignment means, fixed fine alignment means positioned to contact said fine alignment means on said print wheel and provide fine alignment thereof, a housing structure, said fixed fine alignment means being fixed in both axial and

rotative directions relative to said housing, and means to urge said print wheel fine alignment means into contact with said



fixed fine alignment means when said drive means is moved out of contact with said coarse alignment means.

4,338,035

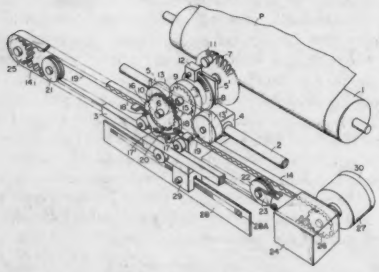
PRINTER

Hiroatsu Kondo, Zushi; Toshiaki Ozawa, Chiba, and Yasuaki Yamada, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,794

Int. Cl.³ B41J *1/08*

U.S. Cl. 400—144.2 **5 Claims**



1. A printer provided with a carriage movable parallel with an axis of a platen for advancing a recording medium, comprising:

a shaft rotatably mounted on said carriage;

a character wheel fixed on said shaft;

a pulley fixed on said shaft; and

means having a first state for inhibiting rotation of said shaft and thereby causing movement of said carriage and having a second state for inhibiting movement of said carriage and thereby causing rotation of said shaft; said means comprising

a guide member parallel with said axis of said platen for guiding said carriage, a rotatable member fixed on said shaft and an engaging member for engaging said rotatable member in said first state and for engaging said guide member in said second state.

4,338,036

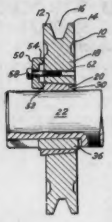
TAPERED BUSHING AND HUB ASSEMBLY FOR SHEAVES, GEARS, SPROCKETS, COUPLINGS AND SIMILAR MACHINE ELEMENTS

Robert P. DeLeu, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Dec. 31, 1979, Ser. No. 108,635

Int. Cl.³ F16D *1/06*; F16B *3/00*

U.S. Cl. 403—16 **9 Claims**



1. A tapered bushing and hub assembly for mounting sheaves, gears, sprockets, couplings and similar machine elements on shafts, comprising a hub with a shaft bore having an annular tapered inner surface, a split bushing disposed in said hub and having an annular tapered outer surface for face-to-face contact with the tapered surface on said hub, a plurality of threaded holes spaced outwardly from said bushing and extending parallel with the axis of said bore, separate lugs for said holes having opposite ends, one end of which seating on the large end of said bushing and the other end of which seating on said hub, each of said lugs having a hole between the ends thereof, and screws extending through said holes in said lugs and threadedly received in said holes for pressing said lugs against said hub and bushing and thereby urging said bushing into said bore for contracting said bushing onto the shaft, the holes in said lugs being sufficiently larger than the respective screw to permit tilting of the lug relative to the screw as the screw presses the bushing into the hub.

4,338,037

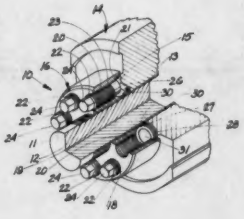
MULTIPLE JACKSCREW ROD TO CROSSHEAD MOUNTING

Richard M. Deminski, Mt. Vernon, Ohio, assignor to The Yorde Machine Products Company, Nelsonville, Ohio

Filed Aug. 8, 1980, Ser. No. 176,490

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—24 **12 Claims**



1. A piston rod to crosshead mounting for use in reciprocating compressors having a generally cylindrical piston rod threadedly engaging a crosshead, said mounting comprising:

a crosshead nut including spaced inner and outer faces, a centrally located threaded through bore for threadedly engaging a cooperating threaded portion of the piston rod, and a plurality of threaded spaced bores spaced from and surrounding said through bore; and

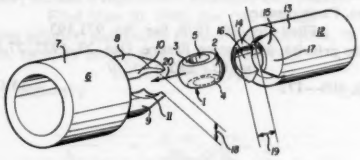
a jackscrew threadedly engaged in each of said spaced bores, each of said jackscrews including means positioned on one end thereof for tightening said jackscrew to a predetermined torque value and a bearing pad having means swivelably connecting said pad to the other end of said jack screw, said pad having a bearing surface configured to seat against the adjacent crosshead surface, said bearing pad being free to adjust itself to any out-of-squareness of the adjacent crosshead surface.

4,338,038

BALL-AND-SOCKET JOINT FOR MULTIARTICULATE ARM

Laurent Cloarec, Noisy-le-Roi, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 11, 1980, Ser. No. 111,347
Claims priority, application France, Jan. 17, 1979, 79 01070
Int. Cl.³ F16C *11/06, 11/00;* F16D *1/12*
U.S. Cl. 403—56 **6 Claims**



1. A ball-and-socket joint assembly for a disassemblable type multiarticulate arm, comprising:

a ball of a first predetermined diameter having a partially spherical shape limited by two parallel planar surfaces a first predetermined distance apart and equidistant from the center of said ball and having a center bore of a second smaller diameter perpendicular to said parallel planar surfaces;

first and second tubular elements, each having a fork formed by a pair of circumferentially curved arms extending parallel to the axis of said tubular elements from adjacent outer ends and meshing with each other so as to enclose said ball, wherein the distance between the extreme ends of said pair of curved arms is less than said first predetermined diameter and at least equal to said first distance; and

each of said pair of curved arms including concave inner spherical surfaces forming a socket within which said ball is disposed, said concave inner spherical surfaces having a diameter corresponding to said first predetermined diameter such that the center of each of said concave inner spherical surfaces and the center of said ball coincide when assembled and said concave inner spherical surfaces of said pair of curved arms are elastically maintained in contact with said ball in opposition to longitudinal dislodging forces.

4,338,039

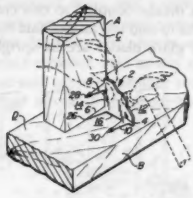
TOENAIL

Guillermo A. Demonty, 119 Nova Albion Way, San Rafael, Calif. 94903

Filed Mar. 3, 1980, Ser. No. 126,500
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—230 **33 Claims**

31. A flat one-piece nail comprising

a head defining a head surface and a pair of bearing surfaces extending away from said head surface in converging relationship relative to each other to terminate at an apex thereof, and



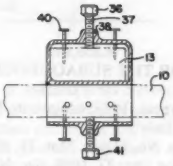
a plurality of laterally spaced and generally parallel shanks extending away from said bearing surfaces and said head surface.

4,338,040

WHALER RETAINER

James H. Hawkins, 27796 Seco Canyon, Saugus, Calif. 91350

Filed Jan. 30, 1981, Ser. No. 230,128
Int. Cl.³ F16B *2/02;* E04G *7/12*
U.S. Cl. 403—385 **4 Claims**



1. A whaler retainer for temporarily supporting a pair of overlapping beams at a predetermined angle with respect to each other, the combination comprising:

a box-like housing having a pair of open-ended passageways extending normal with respect to each other so as to insertably receive the opposing and adjacent ends of said beams;

said housing being provided with a plurality of holes in the top and a side wall of each of said housing passageways;

impact fasteners adapted to be forcibly urged into each of said beams via said plurality of holes;

said housing passageways being disposed over each other so that inserted beams overlap;

adjustable fastening means operably carried on the opposite top walls of said housing passageways for movement into and out of each of said passageways to releasably retain said beams in their respective passageways;

said adjustable fastening means includes a pair of rotary members threadably engaged with each of said opposite top walls of said housing passageways, and with all the walls of one of said housing passageways being part of a unitary piece.

4,338,041

GLAREFOIL ASSEMBLY

Donald W. Schmanski, P.O. Box 1298, Carson City, Nev. 89701

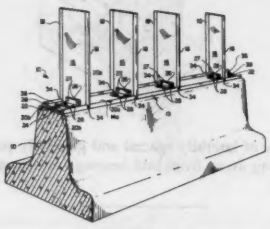
Filed Jan. 12, 1981, Ser. No. 224,261
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—9 **16 Claims**

1. A glarefoil assembly for mounting to a median barrier along a divided highway, comprising:

at least one elongated base runner section having a bottom face for attachment to said median barrier and a top face opposing said bottom face, said base runner section having sufficient length to accept a substantial transfer of vibrational energy from an attached external source;

at least two elongated glare blades adapted for reducing headlight glare from oncoming traffic along said divided highway; and

rigid attachment means coupled to one end of each of said glare blades and to said top face of said base runner section such that said glare blades are in upright light blocking



orientation with respect to a projected median barrier location, said glare blade, said base runner section and said attachment means having material compositions whose physical characteristics permit transfer of substantial vibrational energy from said glare blades into said base runner section to assist in dissipation of said vibrational energy.

4,338,042

APPARATUS FOR THE SUBAQUEOUS ENTRENCHING OF PIPES

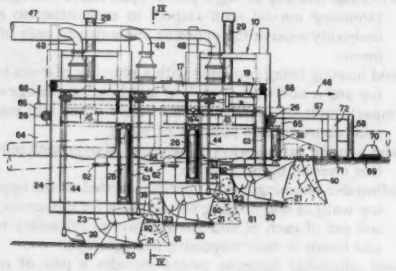
Giovanni Faldi, Firenze, Italy, assignor to Epi Pneuma Systems S.p.A., Firenze, Italy

Continuation of Ser. No. 22,649, Mar. 21, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 201,306

Claims priority, application Italy, Mar. 22, 1978, 21459 A/78; Jun. 14, 1978, 24581 A/78

Int. Cl.³ F16L *11/00*; B63B *35/04*

U.S. Cl. 405—161 **43 Claims**



1. Apparatus for the subaqueous entrenching of pipes, of the type generally comprising a framework, which can be positioned across the pipe to be entrenched, excavating means mounted to the framework and adapted to act along both sides of the pipe already laid onto the bed at least at the position of the framework, so as to form two trenches of predetermined depth, adjacent and parallel to the pipe itself, rippers or ploughs, adapted to disgregate the bed zone directly under the pipe, and a pump for the removal of the material excavated by the excavating means, wherein the framework comprises at least two skid members for the side support and the adjustment of the maximum excavating depth, said skid members being of adjustable height with respect to that of the excavating or dredging means; a first series of disgregating rippers, mounted to vertical rods, driven by levers actuated by ram units and movable between a rest position, in which the rippers are essentially parallel and laterally displaced with respect to the pipe, and an operating position in which the rippers engage the bed zone immediately below the pipe to be entrenched; excavating shovels, forming said excavating means, which are mounted in pairs symmetrically with respect to the framework and in the number of two or more shovels for each side of the framework, each shovel having an excavating edge at a level predetermined and lower with respect to the level of the excavating edge of the next preceding shovel with respect to the dragging direction of the framework; means for the adjustment of the distance between the two internal sides of the framework, said adjustment depending on the diameter of the pipe to be entrenched; a second series of disgregating rippers, which are provided at least in the fore part of the framework and protrude downwardly, in order to engage the bed before the dredging shovels.

4,338,043

METHOD FOR DEPOSITING MATERIAL ON THE OCEAN BED AND APPARATUS FOR PERFORMING THE SAME

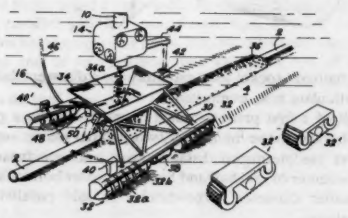
Pierre Biancale, Gif-sur-Yvette; Yves-Paul Corfa, Nantes; Pierre Lemercier, Grenoble, all of France; Jean-Pierre Moreau, De Panne, Belgium, and Jean Vertut, Issy les Moulineaux, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 20, 1978, Ser. No. 971,193

Claims priority, application France, Dec. 23, 1977, 77 39060

Int. Cl.³ E02D *15/10*

U.S. Cl. 405—172 **13 Claims**



1. A method of depositing materials on an ocean bed by a given line, in which an autonomous vehicle is displaced on the ocean bed by accurately following said line and the vehicle is provided with a hopper, a ship is moved on the surface of the ocean roughly in accordance with said line, the materials are discharged from said ship towards the hopper and are guided by means of a pipe suspended beneath the ship and whose lower end is separate from the hopper, wherein the the presence of the hopper is detected by detection means disposed at the lower end of the pipe, the lower end of the pipe being moved by its own propulsion means controlled by said detection means so that the lower end of the pipe is forced to remain above the hopper without mechanical connection with the latter.

4,338,044

PREVENTION OF SLIDING OF A WEIGHT JACKET OVER THE CORROSION COATING OF A PIPE LINE

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 972,840, Dec. 26, 1978, abandoned. This application Mar. 27, 1980, Ser. No. 134,357

Int. Cl.³ F16L *1/04*

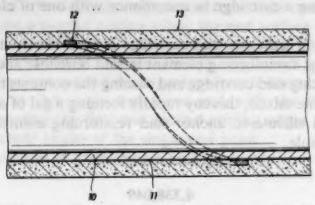
U.S. Cl. 405—172 **7 Claims**

1. A method for laying offshore a metal pipe having a corrosion coating and preventing sliding of a weight jacket on the pipe during tensioning of the pipe, comprising:

disposing at least one spirally wound bar gripping means about the coated pipe;

attaching the gripping means to each end of the coated pipe;

applying the weight jacket about the coated pipe and gripping means; and



laying the pipe offshore under tension applied to the weight jacket.

4,338,045

METHOD AND APPARATUS FOR ANCHORING A LINE, SUCH AS A PIPELINE, TO A SUPPORT, AND IN PARTICULAR A SEA-BED

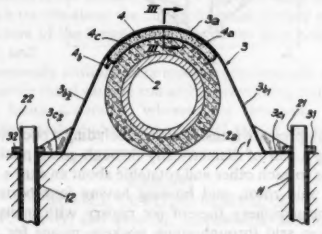
Francis R. Cour, Maisons-Lafitte, France, assignor to Coyne et Bellier, Bureau d'Ingenieurs Conseils, Paris, France

Filed May 20, 1980, Ser. No. 151,635

Claims priority, application France, May 23, 1979, 79 13123; Oct. 29, 1979, 79 26736; Nov. 7, 1979, 79 27459

Int. Cl.³ F16L *1/00*

U.S. Cl. 405—172 **23 Claims**



1. A method of anchoring a line, such as a pipeline, to a support, in particular a sea bed, including the steps at each anchoring point, of:

drilling anchorage holes in said support on both sides of the line;

bedding piles in said holes;

passing a central curved part of at least one saddle clamp having lateral connecting parts around at least a portion of the periphery of the line and arranging an inflatable body in its deflated state between the line and said curved part of each said saddle clamp;

securing said lateral connecting parts of said saddle clamp to said piles; and

injecting a filling material into said inflatable body to provide a jacking effect displacing the line, with respect to said support, piles and saddle clamp, to its anchored position.

4,338,046

BUMPER RING WITH RELIEF GROOVE

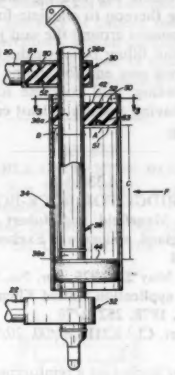
Clarence Thomerson, Navarro, Tex., assignor to Regal International, Inc., Corsicana, Tex.

Filed Feb. 19, 1980, Ser. No. 117,712

Int. Cl.³ E02B *3/22, 17/00;* B63H *21/04*

U.S. Cl. 405—212 **8 Claims**

1. A bumper assembly for protecting an offshore member from contact by vessels such as boats and barges, comprising: upper and lower support arms for connection to said offshore member; a vertically extending cylindrical tubular contact member having sufficient length to span an area of contact and an outer surface of engaging approaching vehicles; a support member extending axially through said contact member and supported by said support arms; and a pair of axially spaced ring means resiliently supporting said contact member from said support member for absorbing shocks applied by a vessel engaging said contact member, said axially spaced ring means being positioned on said support member such that the axis of said contact member is radially spaced from and extending



parallel to the axis of said support member, with each said shock absorbing ring means including a body with a periphery of circular-cross-section and upper and lower surfaces, upper and lower coincident grooves disposed a substantially equal distance away from the periphery of the body and extending into the body from the upper and lower surfaces by a distance sufficient to approximate a uniform spring rate in the body when a vessel engages said contact member.

4,338,047

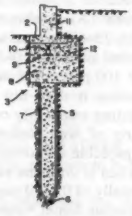
SYSTEM FOR PIER UNDERPINNING OF SETTLING FOUNDATION

Lloyd M. David, St. Louis, Mo., assignor to E. F. David, Inc., St. Louis, Mo.

Filed Sep. 15, 1980, Ser. No. 187,402

Int. Cl.³ E02D *27/48, 35/00*

U.S. Cl. 405—230 **6 Claims**



1. In a system for pier underpinning of settling foundations wherein each pier comprises providing a column of pipe section perpendicularly downwardly aligned directly and centrally underneath the foundation footing and in the vicinity of its settling, said pipe sections driven into the earth being axially aligned, positioning means provided upon each pipe section to facilitate its alignment and retention upon the axially arranged pipe section therebelow, said pipe sections being forced into the earth and to bedrock through the application of force from a hydraulic jack means arranged intermediate the central underside of the footing and the top edge of the upper pipe sec-

tion being forced into the earth, with the first earth inserted pipe section having a pointed downward end to facilitate its movement into the ground, said column extending substantially into contact with the earth's bedrock, said pipe sections having sufficient interior diameter to accommodate the insertion and retention of concrete therein, a supply of concrete filling the said pipe sections and forming a cap thereon of sufficient thickness, a mechanical jack means arranged intermediate and centrally of the under side of the footing and upon the top of the concrete cap and tightened therebetween to support the footing thereon to alleviate foundation settling, a concrete support poured around the said jack means encasing the same therein and filling between the footing and cap for forming the concrete pier and for adding support to the said foundation and footing, said concrete formed cap and the concrete support having a width at least equal to the width of the existing footing.

4,338,048

CARTRIDGE FOR ROCK-BOLTING

John M. Murphy, Mansfield, and Robert H. Spensley, Swanwick, both of England, assignors to Exchem Holdings Limited, London, England

Filed May 22, 1979, Ser. No. 41,502

Claims priority, application United Kingdom, May 31, 1978, 25270/78; May 31, 1978, 25272/78

Int. Cl.³ E21D *20/00, 20/02*

U.S. Cl. 405—261 **12 Claims**

1. A cartridge for anchoring a reinforcing element in a borehole, comprising

an outer tubular frangible casing having disposed therein within separate compartments

(A) an aqueous liquid and an alkali metal silicate, and

(B) a gelling agent for the alkali metal silicate, said gelling agent being capable of forming a gel from the alkali metal silicate when brought into contact therewith as a result of the cartridge being broken by the reinforcing element whereby the constituents (A) and (B) are mixed in the borehole so as to form around the reinforcing element a rapidly hardening grout to anchor the reinforcing element in the borehole, constituent (B) optionally containing an hydraulic substance;

constituent (A), when no hydraulic substance is present in constituent (B), consisting essentially of 10–40 parts by weight of aqueous liquid, 10–25 parts of alkali metal silicate, 0–15 parts of alkali metal siliconate, 0–10 parts of water-soluble additives, and 0–50 parts of water-insoluble additives;

and when said hydraulic substance is present in constituent (B), said constituent (A) consists essentially of 20–80 parts of aqueous liquid, 25–60 parts of alkali metal silicate, 0–30 parts of alkali metal siliconate, 0–15 parts of water-soluble additives, and 0–100 parts of water-insoluble additives;

constituent (B), when it does not contain said hydraulic substance, consisting essentially of 0.1–20 parts of gelling agent, 0–10 parts of water-soluble additives, and 0–60 parts of water-insoluble additives;

constituent (B), when it contains said hydraulic substance, consisting essentially of 0.1–50 parts of gelling agent, 0–40 parts of non-aqueous liquid vehicle, 10–85 parts of said hydraulic substance, 0.20 parts of water-soluble additives and 0–40 parts of water-insoluble additives;

constituent (B) being in paste form, said gelling agent having a flash point in excess of 100° C., said gelling agent being inert with respect to the hydraulic substance and also being compatible with the hardening process involving the hydraulic substance when said hydraulic substance comes into contact with the aqueous liquid present in constituent (A),

and said constituent (B) including as said non-aqueous liquid vehicle or water-soluble additives a substance capable of reducing the exudation of liquid from the mixed composition on setting.

12. A process of anchoring a reinforcing element in a borehole, comprising:

providing a cartridge in accordance with one of claims 1 or 6;

placing at least one said cartridge in a borehole; and

inserting a reinforcing element in said borehole and thereby breaking said cartridge and causing the contents thereof to become mixed, thereby rapidly forming a gel of said alkali metal silicate to anchor said reinforcing element in the borehole.

4,338,049

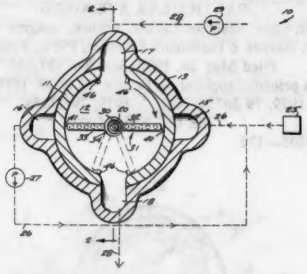
HIGH PRESSURE FEEDER PIVOTAL CENTER SCREEN

Johan C. F. C. Richter, Nice, France, and Michael I. Sherman, Glens Falls, N.Y., assignors to Kamyr, Inc., Glenn Falls, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,518

Int. Cl.³ B65G *53/30, 53/46*

U.S. Cl. 406—63 **17 Claims**



1. A high pressure transfer device including a pocketed rotor containing a pair of diametrically through-going pockets perpendicular to each other and rotatable about an axis; a housing enclosing said rotor, said housing having four ports spaced around the periphery thereof for regisry with inlets to and outlets from said through-going pockets; means for rotating said rotor in said housing with respect to said ports in a given direction of rotation; and a screen disposed interiorly of each of the through-extending pockets between the inlet and outlet of each pocket; and

means for mounting said screen within each said pocket interior so that as liquid under pressure enters said pocket through the inlet thereof the screen will move to enlarge the volume between the inlet and the screen.

4,338,050

METHOD AND TOOL FOR GENERATING HOLES IN COMPOSITE MATERIALS

Theodore Ozer; Alexander Yankovoy, both of Wallingford, and James Imbessi, Morton, all of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 7, 1980, Ser. No. 166,868

Int. Cl.³ B23B *51/00*

U.S. Cl. 408—1 R **17 Claims**

1. A tool, having an axis, for generating a hole in a composite of at least a first material and a second material having a higher modulus of elasticity than the first material when the tool, relative to the composite, is rotated about its axis in a first direction of rotation and is moved in an axial direction against the composite, the tool being in the form of a generally cylindrical rod, portions of which are removed to form an axially extending flute, and comprising:

a planar end surface;

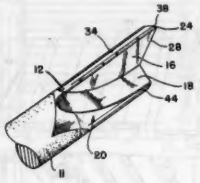
a generally semi-cylindrical outer surface which determines a maximum radial dimension of the tool; and

first and second flute side surfaces which extend radially

inward from the outer surface and axially from the end surface to define the flute;

wherein the first flute side surface intersects the end surface to form a first cutting edge and intersects the outer surface to form a second cutting edge, the end surface intersects the outer surface to form a third edge, the three edges intersecting at a common cutting single end point, with the first and second cutting edges intersecting at an acute angle at the single end point and with the third edge intersecting the first and second cutting edges at respective acute angles at the single end point.

15. A method of generating a hole in a composite of at least



a first material and a second material having a higher modulus of elasticity than the first material, the hole being generated having a circumferential surface limit and a longitudinal axis, the method comprising the steps of:

cutting and continuously penetrating the composite at the circumferential surface limit of the hole and at a point which travels about the circumferential surface and in the direction of the longitudinal axis of the hole being generated; and

simultaneously cutting the composite continuously about the circumferential surface and along a revolving radius of the hole being generated, wherein the revolving radius is inclined relative to the longitudinal axis of the hole.

4,338,051

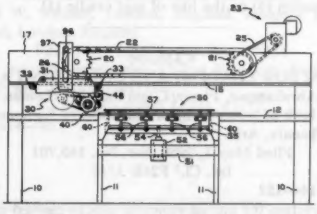
PROFILE CUTTING MACHINE

Richard F. Garver, and Srbo M. Stevanovich, both of Akron, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 2, 1980, Ser. No. 155,730

Int. Cl.³ B23C *3/30, 5/12*

U.S. Cl. 409—184 **2 Claims**



1. A bladder cutting apparatus having a support frame, a support table mounted on said support frame, a pair of laterally spaced vertically moveable bars for clamping a workpiece positioned for movement toward said support table, means connected to said bars for selectively moving said bars between a raised and a lowered position, guideways mounted above said support table, a carriage mounted on said guideways for reciprocal movement, power operated means mounted on said guideways interconnected to said carriage for reciprocating said carriage, a pair of laterally spaced lugs mounted on said carriage, a housing having one end pivotally mounted on said lugs, a pneumatic cylinder having a head end and a piston rod extending therefrom, said head end of said cylinder pivotally connected to the other end of said housing, said piston rod connected to said carriage, said housing supporting a profile cutter for rotation about a horizontal axis, drive means connected to said profile cutter for rotating said cutter, said power operated means connected to said carriage for reciprocating said carriage includes an endless chain mounted on said guideways for movement in an endless path, a pin mounted on said chain for orbital movement therewith, a cam bracket mounted on said carriage for movement therewith, a vertical slot in said cam bracket receiving said pin for moving said carriage and bracket in a reciprocating action, said profile cutter has a plurality of cutters, each cutter having a plurality of circumferentially spaced cutting edges, the profile of said cutting edges defining a pair of spaced inclined edges interconnected by a stepped horizontal edges to provide an interlocking profile.

4,338,052

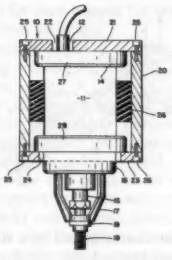
VARIABLE GEOMETRY ROUTER

James H. Lockett, San Pedro, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Mar. 31, 1980, Ser. No. 135,542

Int. Cl.³ B23C *1/06*

U.S. Cl. 409—206 **3 Claims**



1. A router for machining curved surfaces in plates or the like, comprising:

(a) a cylindrical housing including upper and lower end plates,

(b) a router motor enclosed longitudinally in said cylindrical housing;

(c) resilient means supporting said router coaxially within said housing, and positioned midway between the ends of said router;

(d) collar means located on each end of said router motor adapted to prevent longitudinal movement of said router motor within said housing, said resilient means permitting controlled lateral movement in any radial direction of said router motor within the housing.

4,338,053

CARGO RETAINER

Alan S. Abel, Appleton, Wis., assignor to N P Marketing Corporation, Neenah, Wis.

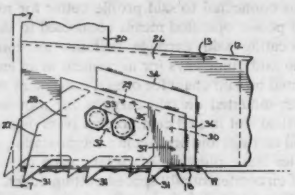
Filed Jul. 17, 1980, Ser. No. 169,848

Int. Cl.³ B61D *45/00*

U.S. Cl. 410—94 **10 Claims**

1. In a cargo retainer having a lower floor contacting member provided with an upwardly facing load bearing surface and an upright member secured adjacent to the rear end of the floor contacting member, a floor piercing element movably mounted on the cargo retainer adjacent to the juncture between the floor contacting member and the upright member, said element being movable relative to the cargo retainer between a position of relatively shallow floor piercing engagement and a position of substantially deeper floor piercing engagement, and means on the cargo retainer adjacent to the juncture between the floor contacting member and the upright

member to drive the floor piercing element from one engagement position to a deeper engagement position with rearward movement of the cargo retainer and thereby limit such movement in service.

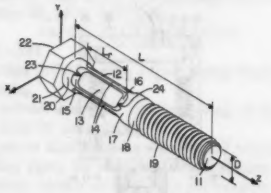


4,338,054

SOLID EXTERNALLY THREADED FASTENERS HAVING GREATLY INCREASED DUCTILITY

Norman C. Dahl, 40 Fern St., Lexington, Mass. 02173

Filed Nov. 19, 1979, Ser. No. 95,165
Int. Cl.³ F16B *35/00*
U.S. Cl. 411—424 **19 Claims**



1. A metal fastener characterized by a sharp yield point and improved elongation beyond the yield point and a tensile strength (force) at least as large as the specified minimum for the grade, size, and threads of said metal fastener, which metal fastener is a bolt of nominal diameter D and is heat treated after forming and comprises:

(a) a head component for the application of torque to the fastener;

(b) an externally threaded component having threads of nominal diameter D with a stress area A_s;

(c) a nonthreaded shank component having a diameter D_s equal to or substantially equal to the nominal diameter D axially extending between the head and threaded components and integrally therewith, the shank component characterized by a reduced portion of axial length L_r with a first transition portion at the one end and a second transition portion at the other end of the reduced portion, and wherein within the reduced portion the maximum axially transverse cross-sectional area A_{rmax} is not larger than the stress area A_s of the threaded component and the minimum cross-sectional area A_{rmin} ranges from about $0.97A_s$ to $(\sigma ts_{min}/\sigma ts_{max})A_s$, where, for the given grade and size of fastener, σts_{min} is the specified minimum allowable tensile strength (stress) and σts_{max} is the tensile strength (stress) corresponding to the specified maximum allowable core hardness, and the axial length L_r ranges from about $\sqrt{A_{rmin}}$ to the maximum length that can be accommodated within the shank component and wherein the axially transverse cross-sectional area A_r is noncircular in shape over substantially the axial length L_r; and

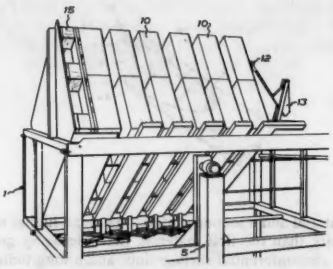
(d) means with the reduced portion, extending axially along substantially the axial length L_r of the reduced portion and the axial lengths of the first and second transition portions, to align the reduced portion of the metal fastener in a passageway in which the metal fastener is to be used and wherein said means to align the fastener includes a plurality of metal, generally parallel, raised, rib means extending generally axially and extending outwardly to the shank diameter D_s of the fastener.

4,338,055

APPARATUS FOR HANDLING PALLETIZED GOODS STACKED IN TIERS

Tomas Petersson, Helsingborg, Sweden, assignor to Frigoscandia AB, Sweden

Filed Jun. 18, 1980, Ser. No. 160,710
Claims priority, application Sweden, Jun. 20, 1979, 7905450
Int. Cl.³ B65G *57/28*
U.S. Cl. 414—114 **8 Claims**



1. Apparatus for handling palletized goods and the like stacked in tiers, said apparatus consisting of a pivoted cradle (1) having two supports (2, 3) for the goods substantially perpendicular to each other, one of said supports normally constituting a horizontal loading plane (2) and the other a vertical supporting plane (3), said planes being adapted alternatingly to support the goods due to the pivoting movement of said cradle (1), characterized in that said supporting plane (3) is composed of a plurality of parts in the form of carriages (9) which are movable towards and away from said loading plane (2) in such a way that the various tiers (10) are separable from each other when supported by the supporting plane formed of the carriages (9), said carriages (9) cooperating with a drive mechanism (16–18) which is adapted to impart to said carriages (9) such a displacing movement that the relative distance between said carriages (9) is always the same, the supporting plane of said carriages (9) comprising two legs (21, 22) directed at right angles to each other, one (22) of which makes 30°–45° with the axis of rotation (4) or the like of said cradle (1).

4,338,056

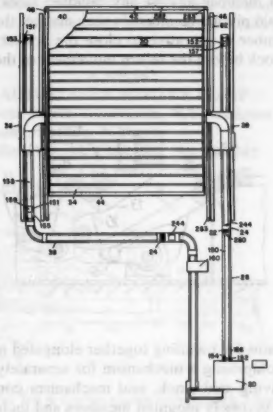
SYSTEM FOR LOADING AND UNLOADING A KILN

Daniel P. Abrahamson, Phoenix, and Paul M. Thomas, Paradise Valley, both of Ariz., assignors to Builders Equipment Company, Phoenix, Ariz.

Filed May 1, 1980, Ser. No. 145,701
Int. Cl.³ F26B *3/18*
U.S. Cl. 414—152 **9 Claims**

1. In a system for curing concrete blocks carried on pallets comprising a kiln including a front end wall and a rear end wall, a plurality of guideways in said kiln, each of said guideways having an infeed end at said front end wall and a discharge end at said rear end wall, each of said guideways being proportioned to receive a plurality of said pallets, and said guideways being arranged in a grid wherein said guideways are disposed in horizontally aligned layers and vertically aligned tiers, means for inserting said pallets into a selected guideway of a selected tier and a selected layer, comprising a laterally movable main frame having an upper end and a lower end, a vertically movable subframe supported on said main frame, means for delivering pallets to said subframe, a conveyor mounted on said subframe for receiving said pallets and for inserting said pallets into the infeed ends of said guideways,

and means for aligning said conveyor with said selected guideway including vertical indexing means corresponding to the height of each layer in said tier, means on said subframe for sensing a predetermined one of said vertical indexing means to position said subframe in vertical alignment with a selected guideway regardless of variations in the vertical position of



said selected guideway relative to said main frame, lateral indexing means for each guideway, sensing means connected to said conveyor for engaging said lateral indexing means and means for laterally moving said conveyor relative to said main frame to engage said sensing means with said lateral indexing means to laterally align said conveyor with the inlet end of a selected guideway.

4,338,057

HANDLING ROD-LIKE ARTICLES

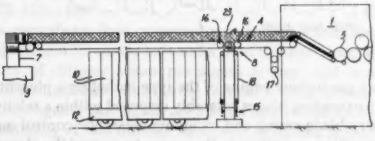
Desmond W. Molins, London, England, assignor to Molins Limited, London, England

Filed Nov. 1, 1979, Ser. No. 90,434

Claims priority, application United Kingdom, Nov. 1, 1978, 42709/78; Apr. 4, 1979, 7911868

Int. Cl.³ B65G *11/33, 47/52*

U.S. Cl. 414—417 **15 Claims**



14. A conveyor system for rod-like articles, including first and second conveyors for conveying streams of rod-like articles in directions transverse to their lengths, a junction between said conveyors, a path extending from said junction in a direction generally transverse to said conveyors, gate means for selectively closing said path, means for successively positioning compartments adjacent said path, and reversible intermittently-movable means for transferring a batch of articles between a compartment and said junction along said path.

4,338,058

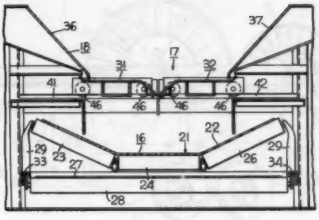
SYNCHRONIZED HOPPER GATE

Joseph P. Davenport, Picton, Canada, assignor to Allis-Chalmers Canada Inc., Quebec, Canada

Filed Jun. 2, 1980, Ser. No. 155,548

Int. Cl.³ B65G *67/58*

U.S. Cl. 414—144 **3 Claims**



1. A bulk cargo ship having a plurality of longitudinally spaced gated hoppers in the bottom of its holds for gravity discharge of bulk material onto an endless belt moving lengthwise of the ship characterized by:

a gate mechanism for each hopper for metering discharge of material therefrom including

a pair of horizontally disposed closure panels at said discharge opening selectively shiftable between open and closed positions,

support means for supporting said pair of panels for translational movement in opposite horizontal directions between said open and closed positions including horizontal tracks along opposite sides of said discharge opening supporting opposite end portions of said closure panels and vertical support columns supporting the outboard ends of said tracks and the associated hopper, and

control means for simultaneously displacing said closure panels in opposite directions toward one another to their closed positions and for simultaneously displacing said closure panels away from one another to their open positions, said control means including

a first pair of sprockets rotatably mounted on said support means by a first shaft means supported at least in part by said vertical support columns on a pair of parallel horizontal axes extending transverse to the direction of movement of said panels,

a second pair of sprockets rotatably mounted on said support means by a second shaft means supported at least in part by said vertical support columns on a pair of parallel horizontal axes extending transverse to the direction of movement of said panels,

first chain means lying alongside one of said support means and operatively engaging said first pair of sprockets so as to form an endless loop with a pair of runs which move, respectively, in said opposite horizontal directions,

second chain means lying alongside the other of said support means and operatively engaging said second pair of sprockets so as to form an endless loop with a pair of runs which move, respectively, in said opposite horizontal directions,

a first pair of fastening means connecting opposite end portions of one of said panels to one set of corresponding runs of said first and second chain means,

a second pair of fastening means connecting opposite end portions of the other of said panels to the other set of corresponding runs of said first and second chain means, and

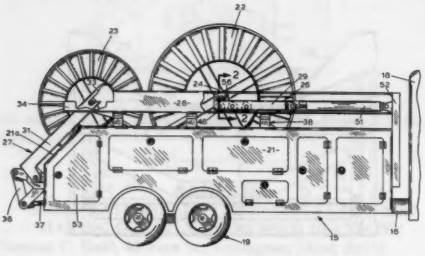
torque transmitting means interconnecting one of said first pair of sprockets to one of said second pair of sprockets whereby corresponding runs of said first and second chain means move in the same direction at the same speed thereby effecting synchronized translational movement of said closure panels.

4,338,059

CABLE REEL HANDLING APPARATUS FOR A VEHICLE

James E. Anderson, West Des Moines, Iowa, assignor to Mid-America Body & Equipment Co., Des Moines, Iowa

Filed Jul. 24, 1980, Ser. No. 171,732
Int. Cl.³ B60P 1/48
U.S. Cl. 414—501 1 Claim



1. A cable reel handling apparatus for a vehicle wherein the cable reel has an axle member, comprising:

(a) a vertically movable reel lifting means mounted at the rear end of the vehicle,

(b) a pair of longitudinally extended upright transversely spaced side frames mounted on said vehicle, said side frames spaced a distance apart greater than the axial length of a cable reel,

(c) a linear track means carried on and extended longitudinally of each side frame adjacent the upper end thereof,

(d) a reel supporting carriage structure extended between and within the vertical confines of said track means,

(e) means guidably supporting said carriage structure on said track means,

(f) linearly extendible and retractable power means mounted on said vehicle in linear alignment with said track means for moving said carriage structure to a rear reel loading position and a forward reel transport position,

(g) said carriage structure having a generally U-shape in plan view with a forward transverse base section and rearwardly extended leg sections movable longitudinally of an adjacent associated track means,

(h) means connecting said power means to said base section,

(i) said base section and power means when the power means is retracted, being located forwardly of a reel in the forward transport position therefor,

(j) said reel lifting means, when the carriage structure is in the reel loading position therefor, being movable to engage a reel on the ground rearwardly of the vehicle for transfer to an axle supported position on said carriage structure for movement therewith to the reel transport position,

(k) each of said leg sections of the carriage structure having a rear terminal portion supported for rolling engagement on an associated track means, and

(l) a pair of longitudinally spaced upright stop members on each of said terminal portions for receiving the reel axle member therebetween, when the carriage structure is in the reel loading position therefor.

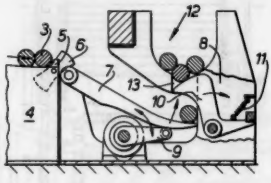
4,338,060

BUNDLING OF METAL STOCK

Harold Swaby, Rotherham, England, assignor to British Steel Corporation, England

Filed Jun. 10, 1980, Ser. No. 158,217
Claims priority, application United Kingdom, Jun. 12, 1979, 7920384
Int. Cl.³ E21B 19/14
U.S. Cl. 414—748 8 Claims

1. A method of bundling together elongated metal stock, comprising laterally transporting said stock separately and successively from a support table to a position on a first pivotal member below a common retaining pocket having a bottom opening provided with a pivotal closure member, lifting said stock upwardly by said first pivotal member against said closure member to force said pivotal closure member to be laterally displaced by movement around its pivotal axis to thereby provide access to the bottom of said pocket, forcibly lifting said stock into the pocket by continued pivotal action of said first pivotal member against any bundled stock in situ, and retracting said pivotal members in such manner that the pivotal closure member is operative to close the pocket and seal the escape of stock before the return movement of the first pivotal member.



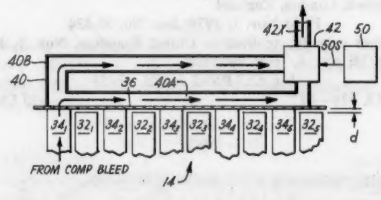
3. Apparatus for bundling together elongated metal stock in a pocket, comprising a mechanism for separately and successively receiving said stock, said mechanism comprising first and second pivotally mounted members and including motive means operable on the first member to lift the stock against the second member whereby to move the second member laterally from a position of rest in which it seals the bottom of the pocket to another position such as to afford access to the pocket for the stock, the second member returning to its rest position to seal the pocket before retraction of the first member.

4,338,061

CONTROL MEANS FOR A GAS TURBINE ENGINE

Richard S. Beitler; Frederick J. Sellers, and George W. Bennett, all of Cincinnati, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 26, 1980, Ser. No. 163,122
Int. Cl.³ F01D 25/08
U.S. Cl. 415—1 12 Claims



1. In a gas turbine engine of the type including a plurality of radially extending blades rotatably disposed within a relatively stationary blade casing and including clearance control means for controlling an airflow to the casing to control the clearance between the blades and the casing, wherein the clearance control means comprises:

(a) means for developing a first signal representative of the actual temperature of said casing;

(b) means for developing a second signal representative of the gas temperature within said casing and proximate to said blades;

(c) means for developing a third signal representative of the rotational speed of said blades;

(d) schedule means for receiving said second and third signals and developing a schedule output signal representative of a reference casing temperature at which a predetermined clearance is provided;

(e) means for comparing said first signal and said schedule output signal and developing a clearance control signal representative of the difference therebetween; and

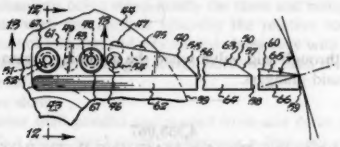
(f) valve means coupled to receive said clearance control signal for controlling said airflow to said casing.

4,338,062

ADJUSTABLE VORTEX PUMP

Maynard J. Neal, North Tonawanda, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,161
Int. Cl.³ F04D *29/24*
U.S. Cl. 415—213 A **14 Claims**



1. An impeller for a vortex pump comprising a hub, a plurality of first sets of holes spaced circumferentially on said hub in fixed relationship to each other with each set including a component extending in a radial direction and extending in a generally straight line, a plurality of vanes each having a blade portion and a root portion, a plurality of second sets of holes in each of said root portions extending lengthwise to said vanes, one of said sets having at least two holes and the other of said sets having at least three holes, and a pair of bolts for extending through two holes of said first set aligned with two holes of said second set for fastening said vanes in different positions wherein said vanes have been moved bodily in the generally straight line direction having a radial component as prescribed by the alignment of said pairs of bolts with different pairs of said holes of said first and second sets whereby each of said vanes may be mounted in a plurality of positions on said hub to thereby vary the diameter of said impeller while maintaining the discharge angle of said vanes within a relatively small predetermined range in said plurality of positions.

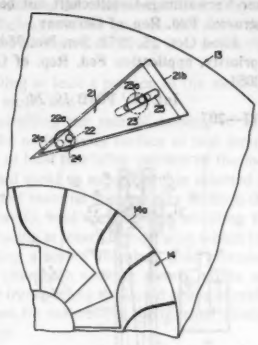
4,338,063

DIFFUSER OF CENTRIFUGAL COMPRESSOR

Keiichi Nakanishi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 7, 1980, Ser. No. 204,932
Claims priority, application Japan, Nov. 30, 1979, 54/154231
Int. Cl.³ F01D *17/12*
U.S. Cl. 415—164 **2 Claims**

1. A centrifugal fluid compressor including a fluid impeller rotatable about its center axis and a fluid diffuser comprising a plurality of diffuser vanes positioned around said impeller, each of said diffuser vanes being formed with a circular hole and an elongated slot which are spaced apart from each other longitudinally of said diffuser vane, said elongated slot extending in the longitudinal direction of said diffuser vane, said diffuser further comprising two stationary support plates which are spaced apart from each other in an axial direction of said diffuser and which have said diffuser vanes movably interposed therebetween, and two eccentric pins provided in association with each of said diffuser vanes, said pins being supported on one of said support plates respectively through openings formed therein and being rotatable independently of each other about axes of rotation offset from respective center axes of said eccentric pins which are substantially parallel with the center axis of said impeller, said pins axially projecting into and being rotatable in said hole and said slot, respectively, whereby



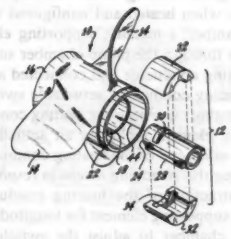
said angular position and said distance can be varied by turning at least one of said pins with respect to said support plates.

4,338,064

CLUTCH ASSEMBLY

Fred Carmel, 2710 Merlin Pl., Oceanside, Calif. 92054

Filed Mar. 31, 1980, Ser. No. 135,728
Int. Cl.³ B63H *23/30*; F16D *7/02*
U.S. Cl. 416—134 R **7 Claims**



1. In a propeller mounting assembly comprising a drive shaft, a drive clutch assembly engaging the drive shaft and a propeller having a bore surrounding said clutch assembly, the improvement wherein said clutch assembly comprises:

(a) a generally tubular rigid bushing having an interior adapted to locking engagement with said drive shaft;

(b) at least one outwardly extending longitudinal ridge on said bushing;

(c) at least one radial flange on said bushing spaced from the bushing ends;

(d) the diameter of said flange being (substantially) less than the diameter of said bore; and

(e) at least one elastomeric cushion having the general configuration of a tube segment, said at least one cushion having a radial outer surface area less than the radial inner surface area of said bore;

(f) said cushion being sized to fit snugly against said bushing with longitudinal cushion edges having only an abutting engagement with said at least one ridge;

(g) said cushion including an internal radial groove adapted to mate with said flange;

(h) the diameter of said assembly being somewhat greater than the internal diameter of said bore;

(i) whereby the outer surface of said cushion is in tight frictional contact with said bore when said assembly is installed in said bore.

4,338,065

THERMO-PNEUMATIC PUMP

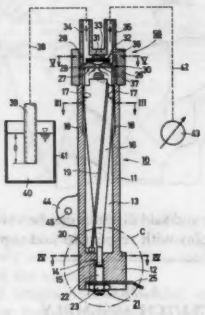
Gerhard Desor, Bad Homburg, Fed. Rep. of Germany, assignor to Hauser Verwaltungs-Gesellschaft mit beschrankter Haftung, Oberursel, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,688

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750051

Int. Cl.³ F04B *19/24*

U.S. Cl. 417—207 13 Claims



1. A thermo-pneumatic pump, comprising: an elongated housing forming a pump chamber and having at least one outlet valve for controlling the flow of pumped fluid therefrom; an elongated heating conductor capable of expanding longitudinally when heated and configured to be disposed in the pump chamber; a metallic supporting element extending longitudinally through the pump chamber substantially parallel to the heating conductor and connected at one end to one end of the heating conductor; actuatable switching means for connecting heating current to the heating conductor by way of the supporting element including an actuating element connected to the other end of the heating conductor for actuating and deactuating the switching means in response to the expansion and contraction of the heating conductor; and means mounting the supporting element for longitudinal displacement in the pump chamber to adjust the switching point of the actuating element.

4,338,066

GREASE GUN

Graham J. Luker, 79 Inverness Ave., Penshurst, Sydney, N.S.W., Australia (2222)

Filed Feb. 11, 1980, Ser. No. 120,636

Claims priority, application Australia, Jan. 25, 1979, PD7476

Int. Cl.³ F04B *3/00*

U.S. Cl. 417—259 8 Claims

1. An ejector head for greasing apparatus which holds a grease supply under predetermined pressure;

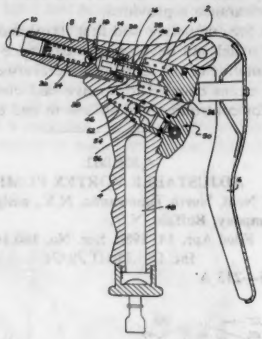
said ejector head comprising;

a pair of interconnecting cylinders of different diameters, plungers movable in said cylinders,

a system of control valves connecting said cylinders with each other and with a grease supply,

a changeover valve selectively operable to alternatively render only one or both plungers operative, actuating means common to both plungers to eject grease at a low pressure and large volume or at high pressure and small volume depending upon the setting of the changeover valve,

a barrel extending forwardly of the cylinders, a one-way valve forming part of said system located between the barrel and the cylinders and means extending forwardly of the plungers and lying between the foremost cylinder and said one way valve for causing grease to pass



through said valve when the actuating means actuates said plungers.

4,338,067

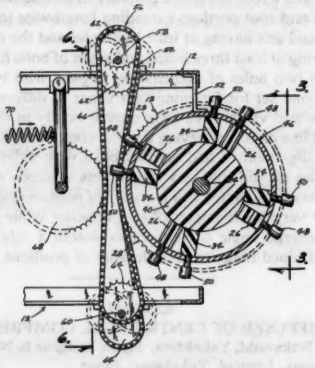
ALTERNATING PISTON MACHINE WITH ROTATING END WALLS AND CHAIN DRIVE

Stuart T. Greenfield, R.R. 2, Ellsworth, Iowa 50075

Filed Feb. 14, 1980, Ser. No. 121,498

Int. Cl.³ F01C *1/063;* F03C *2/00;* F04C *2/063, 18/063*

U.S. Cl. 418—37 3 Claims



1. A rotating piston machine comprising:

a cylindrical shaped housing having first and second circular end walls spaced apart from and parallel to one another, an outer annular wall extending axially between said first and second end walls, and an inner annular wall extending axially between said first and second end walls in concentric spaced relation to said outer annular wall whereby an annular chamber is formed by said inner and outer walls and said first and second end walls,

a support frame,

pivot means pivotally mounting said first and second circular end walls to said frame for rotational movement about a rotational axis, said first end wall being rotatable about said axis independently of said second end wall;

first and second groups of piston blades within said annular chamber, said blades being positioned to partition said annular chamber off into a plurality of circumferentially arranged compartments, said blades of said first group being positioned alternatively with said blades of said

second group, said blades of said first group being connected to said first end wall for movement in unison therewith and said blades of said second group being connected to said second end wall for movement in unison therewith;

a group of inlet valves spaced circumferentially around said outer annular wall and providing communication from the exterior to the interior of said annular chamber,

a group of outlet valves spaced circumferentially around said outer annular wall and providing communication from the interior to the exterior of said annular chamber,

a first drive mechanism connected to said first end wall for rotating said first end wall about said rotational axis in a first predetermined pattern of increasing and decreasing rotational speed;

a second drive mechanism connected to said second end wall for rotating said second end wall about said rotational axis in a second predetermined pattern of increasing and decreasing rotational speed;

said first and second patterns of said first and second drive mechanisms being substantially the same and being out of phase with one another whereby the relative rotational speeds of said first and second end plates vary with respect to one another during at least a portion of each revolution thereof,

a drive shaft,

a counter shaft parallel and spaced from said drive shaft;

said first drive mechanism comprising a first pair of drive sprockets, one of said sprockets of said first pair being fixed to said drive shaft and the other of said sprockets of said first pair being fixed to said counter shaft; at least one of said sprockets of said first pair being mounted for rotation about an axis eccentrically located with respect to the geometric center thereof;

said second drive mechanism having a second pair of drive sprockets of identical construction to said first pair of sprockets, said second pair of sprockets being fixed to said drive and countershafts in the same manner as said first pair of sprockets and in a rotational position which is out of phase with said first pair of drive sprockets;

a first sprocket chain trained around said first pair of sprockets;

a second sprocket chain trained around said second pair of sprockets;

said first circular end wall having a circular pattern of teeth thereon drivingly engaging said first chain between said first pair of sprockets and

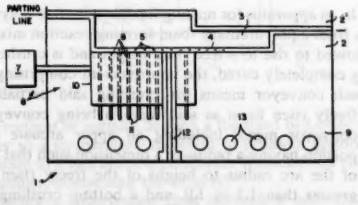
said second circular end wall having a circular pattern of teeth thereon drivingly engaging said second chain between said second pair of sprockets.

4,338,068

INJECTION MOLDING DEVICE AND METHOD

Nam P. Suh, Sudbury, and James R. Rinderle, Watertown, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 22, 1980, Ser. No. 152,493
Int. Cl.³ B29F *1/08*
U.S. Cl. 425—144 **16 Claims**



1. A mold for making injection molded parts comprising:

at least one mold piece, which mold piece defines at least in part a mold cavity;

means for injecting molding material into said mold cavity;

means for heating at least a portion of the mold cavity surface of said mold during the injection of said molding material to maintain the temperature of said injected material at a sufficient level to prevent the molecules of said injected material from solidifying into a specific orientation;

means for cooling at least a portion of the mold cavity surface of said mold; and

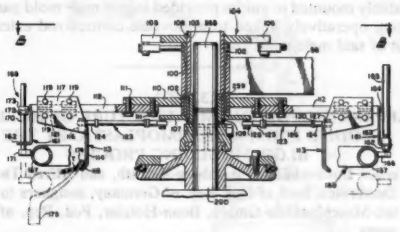
means for controlling the rate of cooling of at least one portion of the mold cavity surface of said mold independently from at least one other portion of the mold cavity surface of said mold so as to maintain selected properties of said injected material substantially uniform throughout said mold cavity, said means for controlling the rate of cooling including at least one heat pipe which has housing means forming a sealed chamber, fluid contained within said sealed chamber, wicking means within said sealed chamber for transporting the liquid phase of said fluid, and control means for controlling the thermal conductance of said heat pipe.

4,338,069

TIRE PRESS

Anand P. Singh, Youngstown, Ohio, and Daniel Shichman, Trumbull, Conn., assignors to NRM Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 138,658, Apr. 9, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 255,733
Int. Cl.³ B29H *5/02*
U.S. Cl. 425—38 **58 Claims**



1. A tire loader in combination with a tire curing press, said press comprising a bottom press half, a top press half movable vertically to open and close said press, and a center mechanism in said bottom press half, said center mechanism including a shaping and curing bladder; and said loader comprising bead grip means for engaging and lifting the upper bead of a green tire and for positioning the green tire in said press, and register means for engaging the green tire in the area of the tread and cooperating with said bead grip means to identify positively the transaxial center plane of symmetry of the tire for insertion of the bladder into the green tire in the press.

4,338,070

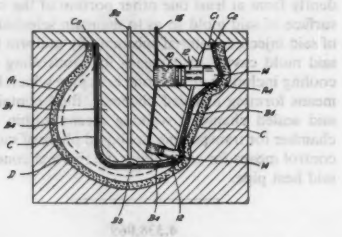
APPARATUS FOR MOLDING REINFORCED RESIN PRODUCTS

Pier L. Nava, Verderio Superiore (Como), Italy

Filed Dec. 12, 1980, Ser. No. 215,881
Claims priority, application Italy, Dec. 20, 1979, 28274 A/79
Int. Cl.³ B29D *3/00*; B29C *1/12*; B29D *9/04*
U.S. Cl. 425—112 **4 Claims**

1. Apparatus for molding reinforced resin products, comprising: a female mold part having a shaped inner surface complementary to the outline of a product to be molded, which outline includes at least one localized projection reproduced in the negative by said shaped surface of said female mold part, said female mold part having adjacent to and coextensive with its shaped inner surface a textile reinforcement for

the product to be molded; and a male mold part movable in and out of said female mold part with substantial clearance and having a shaped outer surface dissimilar to said product outline, said male mold part being encompassed by an attached elastic element which, in use, is outwardly deformable by a pressurized fluid introduced between it and said male mold part in order to force liquid resin occupying said substantial clearance into said textile reinforcement and produce tension in said textile reinforcement by pressing against it, said male mold part including a slidable pusher operable to outwardly



deform a portion of said elastic element adjacent the shaped inner surface region of said female mold part where said localized projection of the product to be molded is reproduced in the negative, said pusher having a working end generally corresponding in shape to said projection and being effective to augment the tension produced in said textile reinforcement by the pressurized fluid-induced deformation of said elastic element at said shaped inner surface region, said pusher being slidably mounted in guides provided in said male mold part and being operatively linked to a movable control rod extending out of said male mold part.

4,338,071

APPARATUS FOR THE MANUFACTURE OF HOLLOW BODIES FROM A THERMOPLASTIC BY THE BLOW-MOULDING PROCESS

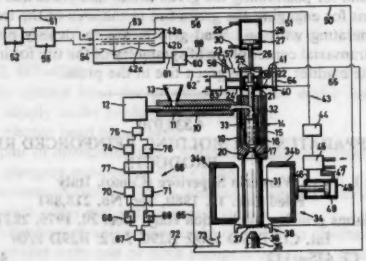
Werner Daubenbüchel, Bensberg-Refrath, and Alfred Thomas, Dambroich, both of Fed. Rep. of Germany, assignors to Kautex-Maschinenbau GmbH, Bonn-Holzlar, Fed. Rep. of Germany

Continuation of Ser. No. 728,620, Oct. 1, 1976, abandoned. This application Jan. 22, 1980, Ser. No. 114,244

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1975, 2544609

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—140 **6 Claims**



1. Blow-moulding apparatus for the manufacture of hollow bodies from parisons formed from a thermoplastic material, said apparatus comprising in combination:

(a) a screw extruder receiving and extruding a charge of thermoplastic material at a controllable rate;

(b) an extrusion head having an accumulator chamber of predetermined size having an inlet positioned to receive thermoplastic material from the screw extruder and means indicating said accumulator is filled;

(c) a gap-like outlet orifice for passing said material from the accumulator chamber;

(d) a piston within said chamber movable to discharge through said outlet orifice a batch of the thermoplastic material of substantially predetermined size for forming a parison;

(e) means to move the piston in the chamber to force thermoplastic material therein through said outlet orifice to form a parison while said screw extruder is extruding material into said head and out of said outlet orifice along with the material accumulated in said chamber to form the parison;

(f) a blow-mould consisting of at least two openable parts, the open mould encompassing the parison;

(g) means for sensing the length of each parison;

(h) means responsive to change in parison length sensed by (g) for adjusting the width of the gap-like outlet orifice to correct for changes in length of the parisons; and

(i) control means responsive to said means indicating the accumulator chamber is filled for controling the rate of extrusion of the material from the extruder during formation of a parison to affect the amount of material per unit time extruded into the accumulating chamber and parison by the extruder and keep the time for producing the parison substantially constant.

4,338,072

APPARATUS FOR CRUSING PARTIALLY CURED FREELY RISEN FOAM

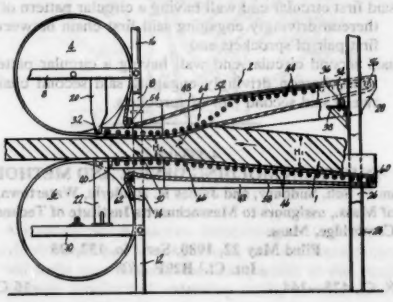
Alan H. Milford, Hamden, and Oliver J. Proulx, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 932,246, Aug. 9, 1978, Pat. No. 4,134,945, which is a continuation-in-part of Ser. No. 738,262, Nov. 2, 1976. This application Nov. 1, 1979, Ser. No. 90,200

The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.³ B29D *27/04*

U.S. Cl. 425—371 **5 Claims**



1. In an apparatus for making flexible densified polyurethane foam from a polyurethane foam-forming reaction mixture that is allowed to rise to a free risen height and is crushed before being completely cured, the improvement comprising:

crush conveyor means for crushing said partially cured freely risen foam as said foam is being conveyed, said conveyor means including an upper arcuate crushing portion having a radius of a dimension such that the ratio of the arc radius to height of the freely risen foam is greater than 1.1 to 1.0, and a bottom crushing portion oppositely disposed from the upper arcuate crushing portion, said bottom crushing portion comprising a planar section.

4,338,073

APPARATUS FOR APPLYING POLYMERIC MATERIAL TO A WORKPIECE

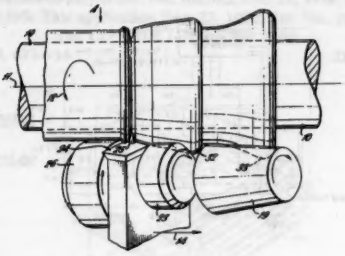
Aleksander Wielesiuk, Swavesey, England, assignor to Barwell Machine and Rubber Group Limited, Cambridge, England

Filed Apr. 10, 1981, Ser. No. 253,153

Claims priority, application United Kingdom, Apr. 11, 1980, 8012052; Jun. 3, 1980, 8018061

Int. Cl.³ B29C *15/00*

U.S. Cl. 425—115 18 Claims



1. An apparatus for applying a polymeric covering to a workpiece comprising means to support and rotate a workpiece about an axis thereof, main rolling means having a rolling surface for forming a nip with the workpiece surface to render plastic, compound and masticate polymeric material previously applied to a workpiece to form a homogeneous layer of the material around the workpiece surface, advanced rolling means having a rolling surface for forming a nip with the workpiece to apply polymeric material to the workpiece surface prior to action thereon by the main rolling means, final rolling means having a rolling surface for forming a nip with the workpiece surface for finish rolling the polymeric material after operation thereon by the main rolling means and means to guide the three rolling means in a direction parallel to said axis to apply a polymeric coating along the length of the workpiece supported and rotating in said workpiece support means.

4,338,074

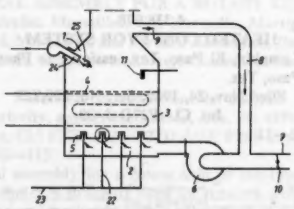
FLUIDIZED BED COMBUSTION CHAMBERS

Lars-Göran Johansson, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Continuation of Ser. No. 916,039, Jun., 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,010

Int. Cl.³ F23D *19/00*

U.S. Cl. 431—6 6 Claims



1. A method of initially heating a fluidized bed combustion chamber to a temperature sufficient to promote ignition and combustion of a fuel introduced into the fluidized bed combustion chamber, comprising the steps of:

circulating a superheated fluid through a heat exchange conduit having a portion immersed in a material forming a fluidized bed in said fluidized bed combustion chamber;

circulating a gas in a substantially vertically upward direction through said fluidized bed and into a bypass conduit in fluid communication with said fluidized bed combustion chamber;

circulating said gas through said bypass conduit and into a separate chamber positioned substantially beneath said fluidized bed;

forcing said gas from said separate chamber into a vertically lower portion of said fluidized bed in said fluidized bed combustion chamber to complete a closed cycle; and

introducing a quantity of fuel into said fluidized bed adjacent said gas.

4,338,075

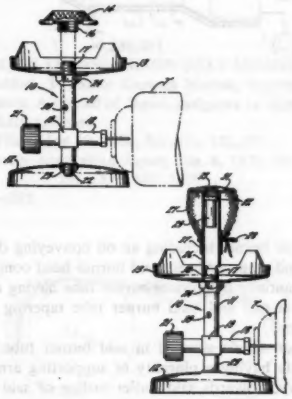
COMBINATION CAMPSTOVE AND LANTERN

Robert A. Bemm, 1241 Swainwood Dr., Glenview, Ill. 60025

Filed Dec. 26, 1979, Ser. No. 106,870

Int. Cl.³ F23D *13/04*

U.S. Cl. 431—344 11 Claims



1. A collapsible campstove and lantern apparatus comprising a stand for supporting said apparatus in an upright position, a burner base mounted in upstanding relation on the stand and having a gas tube with an upper outlet end and a gas inlet end, a stove burner attachment removably mountable on said gas tube outlet end so that when gas is supplied through said gas tube and ignited said apparatus functions as a campstove, a lantern subassembly including a mantle support deflector plate and flame distributor member, said flame distributor member being removably mountable on said gas tube outlet end upon removal of said stove burner attachment, said deflector plate being mounted transversely on and extending radially outwardly from an upper end of said flame distributor member when said member is in mounted position on said gas tube, a cloth mantle positionable in inverted fashion over said mantle support deflector plate and flame distributor member with said deflector plate holding said mantle in a substantially open condition, said mantle having means for securing a lower end thereof about said flame distributor member so that when gas is supplied through said gas tube and member and ignited the mantle is illuminated and said apparatus functions as a lantern, and said stand, burner base, stove attachment, and lantern subassembly, all being disassembleable from each other whereby said burner base, stove attachment, and lantern subassembly may be contained in said stand for compact storage and transport.

4,338,076

OIL BURNER FOR LOW HEATING CAPACITIES

Fritz Straumann, Hauptstrasse, Waldenburg, and Franz Sutter, Bennwilerstrasse, Niederdorf, both of Switzerland

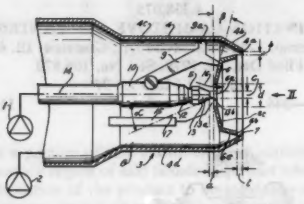
PCT No. PCT/EP78/00028, § 371 Date Aug. 30, 1979, § 102(e) Date Jul. 27, 1979, PCT Pub. No. WO79/00468, PCT Pub. Date Jul. 26, 1979

PCT Filed Dec. 29, 1978, Ser. No. 61,202

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759004

Int. Cl.³ F23Q 3/00

U.S. Cl. 431—351 16 Claims



1. An oil burner including an oil conveying device, an air blower and a burner head, said burner head comprising:

a substantially cylindrical burner tube having an outlet orifice at one end, said burner tube tapering towards the orifice,

a burner nozzle situated in said burner tube, said burner nozzle having a plurality of supporting arms and being tapered towards said outlet orifice of said burner tube thereby to have a frustoconical end zone at a front end thereof, and

a baffle plate attached to and supported by the supporting arms of said burner nozzle, said baffle plate having a cup shape and being arranged in said burner tube in front of said burner nozzle with the interior bottom of the cup shape facing the outlet orifice of said burner tube, the cup shape of said baffle plate including a bottom zone conically widening towards the outlet orifice of said burner tube and having a central opening with a diameter equal to or larger than that of the burner nozzle and a plurality of passage slots radially outwardly extending from the central opening, said passage slots being recessed by bends in the bottom zone forming strip zones extending angularly towards the outlet orifice of said burner tube, and an edge shell around the bottom zone widening towards the outlet orifice of said burner tube so that an annular gap is defined between a front end of the edge shell of said baffle plate and the inner face of said burner tube,

whereby primary air in the burner head is conducted over said frustoconical end zone of said burner nozzle mainly into the central opening of said baffle plate to flow substantially parallel to an axis of said burner tube in at least the edge zone of said central opening of said baffle plate for imparting thorough mixing of air and oil, and secondary air in the burner head is ejected through said annular gap for complete combustion of oil.

4,338,077

METHOD FOR CONTROLLING TEMPERATURE OF MULTI-ZONE HEATING FURNACE

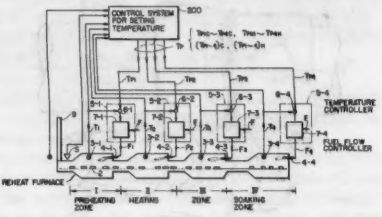
Hiroshi Shibayama, Tokyo; Shinya Tanifuji, Hitachi; Yasuo Morooka, Hitachi; Kozo Nakai, Hitachi, and Nobuyuki Togashi, Ibaraki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Hitachi, Ltd., both of Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,830

Claims priority, application Japan, Nov. 26, 1979, 54/152098

Int. Cl.³ F27D 3/00

U.S. Cl. 432—11 11 Claims



1. In a method of controlling the temperature inside a heating furnace having at least one furnace zone capable of being controlled by heating means and while conveying and heating therein materials to be heated that are introduced thereinto, withdrawing said materials to be heated after they are heated to a predetermined temperature, a method of controlling the temperature of a heating furnace comprising:

memorizing sequentially specific data of said materials to be rolled that are introduced into said heating furnace;

shifting and memorizing said memory values in accordance with the conveying operation of conveyor means inside said heating furnace;

setting a furnace zone temperature in accordance with movement of said materials to be heated;

attaining said furnace zone temperatures set in the preceding temperature setting step by controlling the furnace zone temperatures with said heating means of said furnace zones;

changing the set temperature of said furnace zones in accordance with the position of a leading boundary material of plural materials having different temperature elevation patterns from those of said plural materials to be heated that are sequentially introduced; and

attaining the changed furnace zone temperatures set in the preceding temperature set changing step by controlling the furnace zone temperatures with said heating means of said furnace zones.

4,338,078

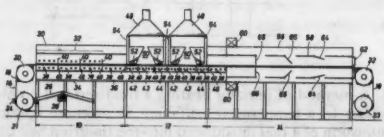
HEATED CONVEYOR SYSTEM

Curtis M. Lampkin, El Paso, Tex., assignor to Photon Power, Inc., El Paso, Tex.

Filed Nov. 24, 1980, Ser. No. 209,723

Int. Cl.³ F27D 3/00

U.S. Cl. 432—11 26 Claims



20. As a sub-assembly, a system for driving an output signal functionally related to surface temperature of a sheet of substrate material being heated by radiative heaters, comprising:

a first thermocouple affixed to said radiative heaters, and

a second thermocouple insertable to a preselected location intermediate of said first thermocouple and said substrate.

4,338,079

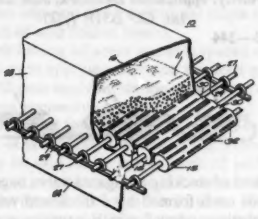
METHOD AND APPARATUS FOR SUBJECTING MINERAL PARTICLES TO GAS FLOW

Bobby P. Faulkner, New Berlin; George T. Lee, West Allis; Peter L. Schumacher, Oak Creek, and Michael H. Weinecke, Greenfield, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 105,982, Dec. 21, 1979, Pat. No. 4,270,899. This application Dec. 23, 1980, Ser. No. 219,998

Int. Cl.³ F27B *15/00*; F26B *3/00*

U.S. Cl. 432—14 **22 Claims**



11. The method of subjecting solid mineral particles to a gas flow comprising the steps of:

continuously delivering said particles onto parallel horizontal cylindrical apertured rollers having elongated filler members in the nip between adjacent rollers,

forming a bed of said particles on said rollers and filler members having a depth several times greater than the average diameter of said particles,

simultaneously agitating said particles and transporting said bed along a path of travel transverse to the axes of said rollers by rotating said rollers to frictionally engage the cylindrical surfaces thereof with and continually transfer said particles in the lowermost course of said bed onto and across said filler members, and

passing a gas stream in a generally vertical direction through the apertures in said rollers and through said bed as it is being so transported and said particles are being agitated, said roller rotating step being at a circumferential velocity substantially higher than the velocity of said bed along said path of travel and said filler members providing resistance to the flow of said bed so that said bed is transported relatively slowly past said gas stream.

4,338,080

SEAL ASSEMBLY FOR A ROTARY KILN

Jean Grandcolas, Marseilles; Guy Harmelin, Martigues; Roger Lazzarini, Marseilles, and Bernard Reverchon, Bouc Bel Air, all of France, assignors to Lafarge Conseils et Etudes, Paris, France

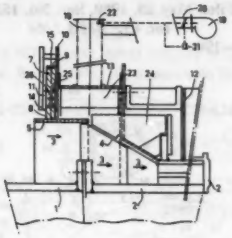
Filed Dec. 23, 1980, Ser. No. 220,169

Claims priority, application France, Dec. 24, 1979, 79 31603

Int. Cl.³ F27B *7/24*; F27D *1/18*; F26B *25/00*

U.S. Cl. 432—115 **4 Claims**

1. A seal assembly for a rotary kiln of the type having a rotating cylinder, a first part fixed for rotation with the rotating cylinder and having an outer cylindrical surface; flexible means for flexibly connecting said first part to said rotary kiln in spaced relation thereto, whereby the cylindrical geometrical form of the cylindrical surface of said first part is maintained despite deformation of said rotating cylinder; a second stationary part having a cylindrical surface approximately coaxial with the rotating cylinder and said first part and lying in spaced relation thereto; a seal assembly interposed between the first and second parts, said seal assembly comprising a liner disposed outwardly of the cylindrical surface of said first part in rubbing contact therewith and including an annular array of graphite elements in contact with one another along generally radial sides, and tensioned elongate flexible clamping means



bearing against the outer surfaces of said graphite elements for clamping said graphite elements against said cylindrical surface.

4,338,081

TORQUE TRANSMISSION BELT MEANS

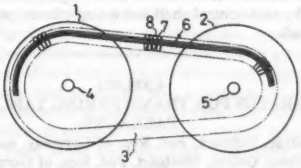
Yoshiyuki Hattori, Toyoake; Kazuma Matsui, Toyohashi, and Hiroji Kinbara, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 19, 1980, Ser. No. 151,155

Claims priority, application Japan, Jun. 8, 1979, 54/72785

Int. Cl.³ F16G *5/00*

U.S. Cl. 474—201 **5 Claims**



1. A torque transmission belt extending between a drive pulley and a driven pulley and movable to transmit a driving force from said drive pulley to said driven pulley, comprising:

a plurality of metallic strips superimposed on each other to form at least one ring;

a series of blocks arranged along said ring and shiftably engaged therewith;

said series of blocks being composed of two kinds of blocks alternately arranged along said strips;

one kind of blocks being made of metal and having opposed side surfaces extending in the direction of movement of the belt, said surfaces including portions which are substantially parallel to one another and remaining portions which are inclined so as to contact surfaces of V-shaped grooves of said pulleys;

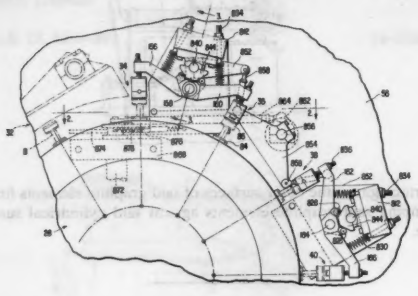
the other kind of blocks being made of a non-metallic compression-resistant material which is lighter than that of said one kind blocks and having opposed side surfaces extending transversely of the direction of movement of the belt, said surfaces including portions which are inclined so that the distance therebetween is decreased toward the inside surface of said belt, said blocks having additional opposed side surfaces extending in the direction of movement which do not contact said surfaces of the V-shaped grooves of said pulleys.

4,338,082

POSITIONING MECHANISM FOR SUPPORT ARM OF HEAT SEALING AND COOLING DEVICES

Jack R. Evers, Torrance, Calif., assignor to Developak Corporation, Redondo Beach, Calif.

Filed May 23, 1980, Ser. No. 152,715
Int. Cl.³ B31B 1/64
U.S. Cl. 493—190 9 Claims



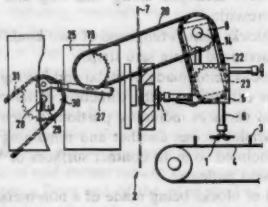
1. A mechanism comprising a pair of pivotally mounted arms, and a drive mechanism for sequentially moving said arms to operative and inoperative positions, said drive mechanism including each of said arms having a control portion, a drive shaft, and a cam carried by said drive shaft, said cam having separate segments cooperating with said control portions, there are two sets of said arms each having one of said drive mechanisms, a control shaft mounted between said sets of arms, and control means carried by said control shaft and connected to said drive shafts for simultaneously actuating said drive shafts, said control means including a double ended lever carried by said control shaft and a single lever carried by each drive shaft.

4,338,083

APPARATUS FOR TRANSFERRING TABLET STRIP PACKAGES

Rolf Andrae, Feilbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,366
Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922171
Int. Cl.³ B31B 1/16
U.S. Cl. 493—239 4 Claims



1. An apparatus for processing strip packages, having:

a horizontally operating stamping device to stamp out strip packages;

a horizontal conveyor belt to transport the strip packages;

a plurality of suction devices to grip the strip packages and to transfer the strip packages from the stamping device to the conveyor belt;

a transfer head on which the plurality of suction devices are mounted, wherein the transfer head is moved in a swinging manner;

a swing which supports the transfer head, wherein the swing moves and carries the transfer head through one swinging movement for each stamping stroke of the stamping device, and wherein the swing is connected to pivot the transfer head 90° for each swinging movement such that the pivot of the transfer head is partially superimposed on the swinging movement of the transfer head.

4,338,084

METHOD FOR PILING OR STACKING SACKS OR BAGS

Ernst R. Berthelsen, Terndrup, Denmark, assignor to Bates Ventilsaekke Co. A/S, Norresundby, Denmark

Filed May 1, 1980, Ser. No. 145,855
Claims priority, application Denmark, Jun. 25, 1979, 2651/79
Int. Cl.³ B31B 1/00
U.S. Cl. 493—244 3 Claims

1. A method of stacking elongated valve bags having closed opposite ends each formed by a thickened reinforced folded and sized portion, one of which contains a valve opening, comprising the steps of

placing each bag in flat condition with the sized end portions thereof folded flatly against the body of the bag and facing upwardly, and with the folds at each end portion presenting a multi-ply formation of greater thickness than the intermediate portion of the bag between said folds,

folding said intermediate portion of the bag between said folded end portions along spaced fold lines transverse to the longitudinal axis of said bag into a multi-ply formation having a thickness substantially equal to the thickness of the folded formations at the ends of the bag, and

stacking said folded bags in horizontal flat condition, one upon another, with the folded and sized end portions facing in the same direction, the valve openings registering with each other, and the edges of the bags in alignment.

4,338,085

APPARATUS FOR MANUFACTURING ENVELOPES

John Sullivan, San Jose, and Harold R. Lillibridge, Burlingame, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 3, 1980, Ser. No. 136,493
Int. Cl.³ B31B 21/26
U.S. Cl. 493—254 20 Claims

1. In an apparatus for manufacturing envelopes from substantially planar envelope blanks having a leading and trailing edge connected by a pair of spaced side edges, said apparatus including successively, a first and second scoring station, a first folding station, a gum applying station, and a second folding station:

means for feeding said blanks in tandem to said stations including at least one upper and lower blank contacting

belt for supporting and feeding each blank through said gum applying and second folding stations,

means for spacing said blanks from each other and aligning the blanks with said stations,

means at said first scoring station for scoring the blanks along line spaced from but parallel to the side edges thereof,

means at said second scoring station for scoring the blanks substantially perpendicular to the first score lines intermediate the leading and the trailing edges of each blank,

means at said first folding station for folding said blanks substantially in half about said intermediate score line so that the leading edge of each blank overlaps the trailing edge thereof to form a lower and upper folded half,

means at said gum applying station including a pair of spaced gum applying dies in the feed path of each of said blanks for transferring gum from a gum pot to said blanks along spaced areas adjacent the longitudinal edges of the upper half of each of said folded blanks,

said lower belt having adjacent portions spaced substantially below said gum applying dies and the feed path of each blank at said gum applying station so as not to contact said dies between successive blanks,

means at said second folding station disposed in the path of movement of said blanks for folding the opposite longitudinal edges on said lower half of each of said blanks 180 degrees about an adjacent score line to overlie a gummed area on the upper half of said blank, and

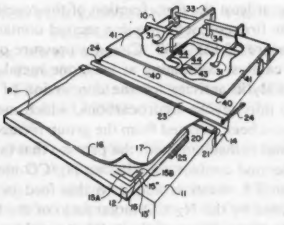
means for conveying said folded and gummed blanks to a collection point.

4,338,086

MACHINE FOR MAKING LONGITUDINAL AND TRANSVERSE FOLDS IN FABRIC

Charles P. Heater, Boys Camp Rd., Lake Lure, N.C. 28746

Filed Aug. 29, 1980, Ser. No. 182,269
Int. Cl.³ B65H *45/14*
U.S. Cl. 493—419 **7 Claims**



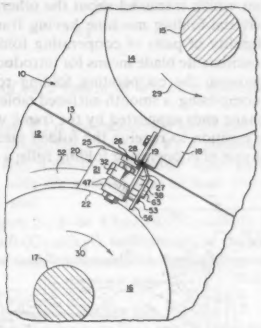
1. In a machine for folding fabric articles having in opposed relationship a leading edge and a trailing edge and said machine having a substantially horizontal frame extending between the rear and front of the machine, a first folding station including the combination of a feed table at the rear of the frame, an abutment spaced forwardly of the feed table a distance less than the corresponding dimension of an article to be folded, means for positioning an article to be folded at a predetermined position on the feed table with the trailing edge of the article at a predetermined position on the feed table and with the leading edge of the article overlying the abutment, a stationary fold plate having a rear edge spaced forwardly from the abutment a desired distance to provide an edge about which the article is folded, a pivotal rod movable between a first position against the abutment and a second position located forwardly of the rear edge of the stationary fold plate, means for moving the pivotal rod to the first position to clamp against the abutment the leading edge of an article occupying said predetermined position, means for folding the article about a first fold line to position the trailing edge of said article in overlying relation to its leading edge and for positioning said article in overlying relation to the pivotal rod while the pivotal rod clamps the leading edge of the article against the abutment, and means for moving the pivotal rod and the overlying trailing and leading end portions of the article to said second position thereby folding the article about the rear edge of the stationary fold plate.

4,338,087

COMBINED WEB JAW AND BIGHT STRIPPER

Clyde G. Gregoire, Bensenville, Ill., assignor to Baldwin-Gregg, Inc., Lyons, Ill.

Filed Jan. 12, 1981, Ser. No. 224,624
Int. Cl.³ B65H *45/16*
U.S. Cl. 493—425 **4 Claims**



1. A combination web gripper and bight stripper for use in a web folder comprising a frame structure, a roller journaled for rotation in said frame structure, a working box carried transversely on the outer surface of said roller, the working box having a stationary jaw and a transversely endwise movable actuator, cam means on said frame structure for effecting endwise sliding of said actuator, a moving jaw, means guiding said moving jaw relative to said stationary jaw in a straight in movement toward said stationary jaw and a straight out movement away from said stationary jaw, a plurality of angularly disposed cam elements interposed between said moving jaw and said actuator to effect a movement of said moving jaw toward and away from said stationary jaw upon endwise movement of said actuator, a web bight stripper movable with said moving jaw toward and away from said stationary jaw, means guiding said bight stripper relative to said stationary jaw in a straight up and down movement separate from said movable jaw, a plurality of angularly disposed cam elements interposed between said bight stripper and said actuator to effect the separate movement of said bight stripper from a position substantially level with said moving jaw to a position spaced above said moving jaw upon endwise movement of said actuator.

4,338,088

FOLDING MACHINE

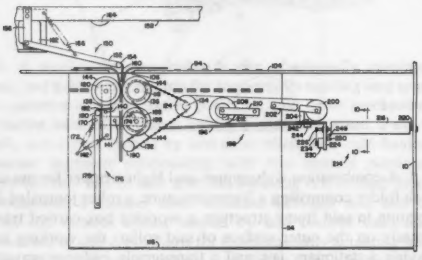
Randall D. Buss, and Benjamin A. Buss, both of 1315 23rd Ave. Ct., East Moline, Ill. 61244

Filed Aug. 29, 1977, Ser. No. 828,302
Int. Cl.³ B65H *45/04*
U.S. Cl. 493—445 **19 Claims**

1. A material-folding machine comprising: a frame; a pair of cooperating folding rolls rotatably supported on the frame with a first of the pair rotatable about a fixed axis and a second of the pair rotatable about an axis mounted for movement in an arcuate path toward and away from the first; means yieldably biasing the second of the pair of folding rolls toward the first thereof; oscillatory blade means supported on the frame for movement into engagement with material between the blade means and the pair of folding rolls to move the material be-

tween the pair of folding rolls; and a single positive drive means for the pair of folding rolls including a transversely grooved pulley mounted on each of the pair of folding rolls at common ends thereof, an idler pulley mounted on the frame for rotation in a fixed position and in alignment with the grooved pulleys and on the side of the grooved pulley mounted on the second of the pair of folding rolls opposite from the pulley mounted on the first of the pair of folding rolls, a drive pulley mounted on the frame in alignment with and spaced from the first three mentioned pulleys for rotation in a fixed position, and a flexible dual grip drive belt having cogs on the opposite sides thereof spaced to engage in the grooves of the pulleys trained about the pulleys and about the pulley mounted on the one of the pair of folding rolls in a direction opposite from which it trained about the other pulleys.

7. In a material-folding machine having frame means supporting a plurality of pairs of cooperating folding rolls and a plurality of oscillatable blade means for introducing material to be folded between the cooperating folding rolls, a stacking mechanism comprising: a smooth-surfaced table having receiving and dischage ends supported by the frame with the receiving end in a position to receive the folded material emerging from the last pair of cooperating folding rolls; a roller mounted



on the frame at each of the receiving and discharge ends of the table in parallelism to the last pair of cooperating folding rolls and slightly above the table; means for driving one of the rollers; belt means trained about the rollers to frictionally engage the folding material fed onto the receiving end of the table from the last pair of cooperating folding rolls and move the material to and beyond the discharge end of the table; a pair a pair of drop door means supported on the frame adjacent the discharge end of the table to receive the folded material from the table, each of the pair of door means being mounted for movement between open and closed positions about a generally horizontal axis parallel to the direction of movement of the folded material on the table and outside the area covered by the material when on the door means, and the pair of door means each extending from its respective axis inwardly and upwardly to an inner edge positioned adjacent to the other door means when in the closed positioned; motor means controlling the door means and normally holding them in the (a) closed position; sensor means on the discharge end of the table for sensing the passage of material thereover to activate the motor means and drop the door means when the material has completely passed off the table; and platform means supported on the frame below the door means to receive the folded material dropped by the door means.

4,338,089

PROCESS FOR PREPARATION OF HYDROCARBONS

Lambert Schaper, and Swan T. Sie, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 31, 1980, Ser. No. 174,066

Claims priority, application Netherlands, Aug. 6, 1979, 7906003

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—707 **15 Claims**

1. A process for the preparation of a hydrocarbon mixture, from a feed mixture of carbon monoxide and hydrogen with an H_2/CO molar ratio of less than 1.0 which comprises contacting said feed at a temperature of 200°–500° C., a pressure of 1–150 bar and a space velocity of 50–5000 Nl gas/l catalyst/h in a first contact zone with a trifunctional catalyst combination containing: (a) at least one metal component with catalytic activity for the conversion of an H_2/CO mixture into acyclic hydrocarbons and/or acyclic oxygen-containing hydrocarbons, (b) at least one metal component with catalytic activity for the conversion of an H_2O/CO mixture into an H_2/CO_2 mixture, and (c) a crystalline silicate with catalytic activity for the conversion of acyclic hydrocarbons and acyclic oxygen-containing hydrocarbons into aromatic hydrocarbons, which silicate has the following properties:

(a) thermally stable up to a temperature above 600° C.,

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A of the specification,

(c) a composition which includes oxides of hydrogen, alkali metal and/or alkaline-earth metal and silicon, and at least one oxide of a trivalent metal, A, selected from the group formed by aluminum, iron and gallium, wherein A_2O_3/SiO_2 molar ratio(m) is less than 0.1; and

contacting at least the C_2^- fraction of the reaction product from the first contact zone in a second contact zone at a temperature of 125°–350° C. and a pressure of 1–150 bar with a catalyst containing at least one metal component with catalytic activity for the conversion of an H_2/CO mixture into acyclic hydrocarbons, which metal components have been selected from the group formed by cobalt, nickel and ruthenium, with the proviso that (a) if the feed to the second contact zone has an H_2/CO molar ratio of less than 1.5, water is added to this feed in an amount determined by the H_2/CO molar ratio of the feed for the first step, the activity of the catalyst combination in said first step for converting an H_2O/CO mixture into an H_2/CO mixture and the desired H_2/CO molar ratio of the first step reaction product, and (b) that said catalyst is a bifunctional combination which also contains at least one metal component with catalytic activity for the conversion of an H_2O/CO mixture into an H_2/CO_2 mixture.

4,338,090

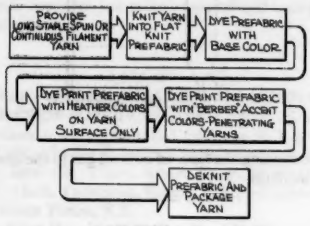
SIMULATED BERBER YARN AND PROCESS OF PRODUCING SAME

William F. Hutcheson, Lookout Mountain, Tenn., assignor to Rossville Yarn Processing Company, Rossville, Ga.

Division of Ser. No. 41,183, May 21, 1979. This application Apr. 10, 1980, Ser. No. 138,827

Int. Cl.³ D04B *19/00;* D06P *3/70, 5/15, 7/00*

U.S. Cl. 8—478 4 Claims


PROVIDE LONG STAPLE SPUN OR CONTINUOUS FILAMENT YARN
KNIT YARN INTO FLAT KNIT PREFABRIC
DYE PREFABRIC WITH BASE COLOR
DYE PRINT PREFABRIC WITH HEATHER COLORS ON YARN SURFACE ONLY
DYE PRINT PREFABRIC WITH "BERBER" ACCENT COLORS PENETRATING YARNS
DEKNIT PREFABRIC AND PACKAGE YARN

1. A yarn formed of synthetic continuous filaments or long staple spun synthetic fibers and characterized by having an appearance simulating the natural aesthetic appearance of "Berber" wool yarns, said yarn having varying size areas of at least one heather color randomly located along the length of the yarn and at various angular locations around the peripheral surface of the yarn, said heather color areas residing on surface portions only of the yarn without penetrating all the way through the yarn, and said yarn also having areas of at least one accent color randomly located along the length of the yarn and penetrating all the way through the yarn.

4,338,091

PROCESS FOR LOWERING THE VISCOSITY OF SULFONATED LIGNINS

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 13, 1981, Ser. No. 292,629

Int. Cl.³ D06P *67/02;* C07S *1/00*

U.S. Cl. 8—524 10 Claims

1. A process for preparing sulfonated lignins possessing low viscosity which comprises the steps of:

(a) treating an aqueous lignin solution obtained from an alkaline wood pulping process with from about 1 percent to about 10 percent of sodium dithionate, based on the weight of lignin; and

(b) subsequently reacting the sodium dithionite treated lignin with a water soluble sulfite (or bisulfite) in combination with an aldehyde.

4,338,092

DISAZO COMPOUNDS HAVING A 4,6,8-TRISULFONAPHTHYL DIAZO COMPONENTS RADICAL AND A 2-AMINO OR SUBSTITUTED AMINO-4-CHLORO-1,3,5-TRIAZIN-6-YL-AMINO SUBSTITUENT

Lukas Schneider, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

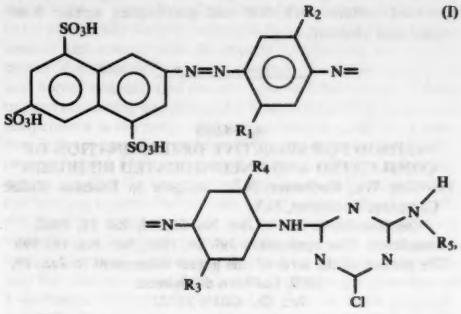
Filed Dec. 17, 1980, Ser. No. 217,530

Claims priority, application Switzerland, Dec. 21, 1979, 11411/79

Int. Cl.³ C09B *62/00*

U.S. Cl. 8—549 20 Claims

1. A compound of the formula



or a salt thereof each cation of which is non-chromophoric, wherein

each of R_1 and R_3 is independently hydrogen, methyl, methoxy or —$NHCOR_6$, wherein R_6 is methyl or amino,

each of R_2 and R_4 is independently hydrogen, methyl or methoxy, with the proviso that at least one of R_1–R_4 is hydrogen, and

R_5 is hydrogen, 2-, 3- or 4-hydroxy(C_{2-4}alkyl), carboxy(C_{1-4}alkyl), sulfo(C_{1-4}alkyl), sulfophenyl or carboxyphenyl,

or a mixture of such compounds in free acid or salt form.

4,338,093

PROCESS FOR DYEING WITH REACTIVE DYESTUFFS

Dietrich Hildebrand, Odenthal, and Wolfgang Lohnert, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,375

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027546

Int. Cl.³ C09B *62/00;* D06P *3/66*

U.S. Cl. 8—549 10 Claims

1. Process for dyeing cellulose fibres and fibre mixtures containing cellulose fibres, characterised in that at least two different reactive dyestuffs which give dyeings of the same colour shade on cellulose and which have reactivities which differ by a factor of at least 10 are employed.

4,338,094

MACROENCAPSULATED IMMUNOSORBENT ASSAY TECHNIQUE

Nasik Elghi, 41-77 Frame Pl., Flushing, N.Y. 11355

Continuation-in-part of Ser. No. 87,928, Oct. 25, 1979, Pat. No. 4,280,816. This application Apr. 7, 1980, Ser. No. 137,617

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ G01N *33/54, 33/56*

U.S. Cl. 23—230 B 7 Claims

1. In a method for determining the presence and concentration of an antigen in a liquid m :dium by immunoassay wherein a supported antibody to said antigen is brought into contact with said liquid medium in an amount and for a time sufficient to bind substantially all of said antigen to said supported antibody, and wherein antibody to said antigen which has been labelled to permit its detection is contacted with the supported antibody to which antigen has been bound so as to bring about binding of the labelled antibody to the antigen bound to the supported antibody, and thereafter determining by suitable detection means the amount of the labelled antibody either bound to said antigen bound to said supported antibody or the amount of the labelled antibody which is not bound to said antigen, the improvement comprising providing said supported antibody as an element comprising particulate supported antibody loosely encapsulated and confined within a rigid porous filter membrane having a pore size less than the size of said

particulates, said element being of a substantially fixed, predetermined volume such that said particulates agitate freely within said element.

4,338,095

METHOD FOR SELECTIVE DETERMINATION OF CONJUGATED AND UNCONJUGATED BILIRUBIN

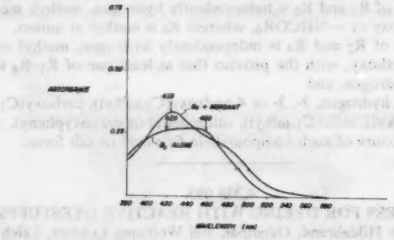
Tai-Wing Wu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 56,584, Jul. 11, 1980, abandoned. This application Jul. 14, 1980, Ser. No. 167,999

The portion of the term of this patent subsequent to Jan. 19, 1999, has been disclaimed.

Int. Cl.³ G01N *33/72*

U.S. Cl. 23—230 B **13 Claims**



1. A method for the selective determination of the unconjugated bilirubin (B_U) or conjugated bilirubin (B_C), as well as the total bilirubin (B_T), content of an aqueous liquid, containing B_C and B_U, said method comprising:

(A) contacting together said aqueous liquid with an analytical element having an essentially dry reagent zone comprising an interactive mordant for bilirubin to mordant bilirubin, the mordanted bilirubin exhibiting a detectable absorption or emission spectrum containing the individual absorption or emission bands characteristic of each of the mordanted B_U and B_C components in said aqueous liquid;

(B) detecting the absorption or emission spectra of said mordanted bilirubin at two absorption or emission wavelengths thereof,

(1) one wavelength being at or near an absorption or emission maximum of mordanted B_U,

(2) one wavelength being at or near an absorption or emission maximum of mordanted B_C, and

(3) the molar absorption or emission characteristics of mordanted B_U and mordanted B_C for each of these wavelengths having been predetermined based on a B_U molecular weight of 584 and a B_C molecular weight in the range from about 750 to 940; and

(C) determining B_U, B_C and/or B_T from said absorption or emission spectra and said molar absorption or emission characteristics.

4,338,096

METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF MOLTEN REACTION MEDIA

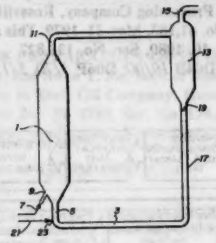
Warden W. Mayes, Dallas, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Oct. 6, 1980, Ser. No. 193,981

Int. Cl.³ G05D *7/00*; C10G *45/72*

U.S. Cl. 23—230 A **86 Claims**

1. A method of controlling the flow of a molten mass reaction medium through a supply conduit to a reaction zone comprising introducing a control gas into said supply conduit



and apportioning the flow of control gas to the desired flow of molten medium.

4,338,097

CORROSION MONITORING PROCESS AND APPARATUS FOR USE THEREIN

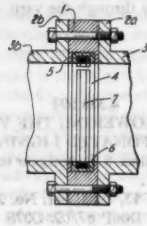
Mervyn E. D. Turner, Middlesbrough, and Joshua C. Quayle, Stockton-on-Tees, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 16, 1980, Ser. No. 217,151

Claims priority, application United Kingdom, May 8, 1980, 8015221

Int. Cl.³ G01N *17/00*

U.S. Cl. 23—230 C **12 Claims**



1. A method of monitoring corrosion of the surface of a component subject to a corrosive environment comprising

(i) forming an elongated strip test element from the material of said component,

(ii) mounting said test element, out of contact with said component, in a surface in a housing so that one elongated surface of said test element and said surface of the housing are flush with said component surface, and are exposed to said corrosive environment, said one surface of the test element extending, in the direct of its length over substantially all of one dimension of said component surface, and

(iii) monitoring the thickness of said test element.

4,338,098

SOLID HEAT-GENERATING COMPOSITION

Teizo Yamaji, Yamaguchi, Japan, assignor to Teitin Limited, Osaka, Japan

Filed Apr. 1, 1980, Ser. No. 136,246

Claims priority, application Japan, Apr. 3, 1979, 54-39324; May 2, 1979, 54-53349; May 2, 1979, 54-53350; Jun. 13, 1979, 54-73480

Int. Cl.³ F41C *7/00, 11/00*; F24J *1/00*; A61F *7/00*

U.S. Cl. 44—3 A **10 Claims**

1. A self-contained solid two-component heat-generating chemical system packaged in a form ready for use to generate heat in the form of heat of hydration of calcium oxide by

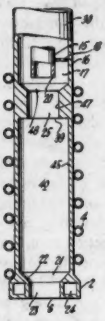
allowing said two-components to contact each other, the first of said two-components comprising granules or powder of calcium oxide, and the second of said two-components comprising granules or powder of a solid substance containing water of crystallization which substance supplies the water required for the hydration of calcium oxide exclusively of any externally supplied water, said ready for use package including at least one partition physically separating the calcium oxide from the solid substance to maintain the calcium oxide and the solid substance out of contact with each other until said at least one partition is removed just prior to use of said heat-generating chemical system.

4,338,099

PROCESS FOR THE PARTIAL OXIDATION OF SLURRIES OF SOLID CARBONACEOUS FUELS

William B. Crouch, Chappaqua, N.Y.; George N. Richter, San Marino, Calif.; Charles P. Marion, Mamaroneck, N.Y.; Blake Reynolds, Riverside, Conn.; Albert Brent, Huntington, and Edward T. Child, Tarrytown, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,215
Int. Cl.³ C10J *3/46*
U.S. Cl. 48—197 R **18 Claims**



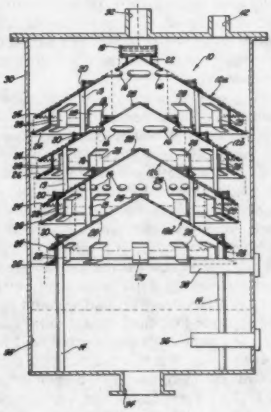
1. In a continuous process for the manufacture of gas mixtures comprising H_2, CO, CO_2 and at least one material from the group H_2O, N_2, A, CH_4, H_2S and COS by the partial oxidation of a feedstream comprising a pumpable slurry of solid carbonaceous fuel in a liquid carrier, and a feedstream of free-oxygen containing gas, and optionally, a temperature moderator; said partial oxidation occurring in the reaction zone of a free-flow gas generator at an autogenous temperature in the range of about 1700° to 3500° F., and a pressure in the range of about 5 to 300 atmospheres, the improvement which comprises: passing said slurry feedstream of solid carbonaceous fuel in a liquid carrier in liquid phase and having a solids content in the range of about 30 to 75 weight % and being at a temperature in the range of about ambient to 500° F., a pressure in the range of about 76 to 4500 psia, and a velocity in the range of about 0.5 to 75 ft. per second through one passage of a burner and into an internal pre-mix zone in said burner, and wherein said burner comprises a central conduit coaxial with the central longitudinal axis of said burner and having a downstream exit orifice that discharges into said pre-mix zone, said central conduit providing a passage, an outer coaxial conduit providing a free-flow annular passage along the length of said central conduit between the inside diameter of said outer conduit and the outside diameter of said central conduit, an exit nozzle terminating said outer conduit at the downstream end of said burner comprising a converging frusto-conical rear portion and a right cylindrical front portion which terminates at the downstream face of the burner, an annular shaped face-cooling chamber surrounding said exit nozzle at the burner tip, and wherein the tip of said central conduit is retracted upstream from the face of said burner a distance of two or more times the minimum diameter of said outer conduit converging exit nozzle to provide said pre-mix zone comprising at least two cylindrically shaped communicating pre-mix chambers in tandem and coaxial with the central longitudinal axis of said burner simultaneously passing through the other passage in said burner and into said pre-mix zone said feedstream of free-oxygen containing gas optionally in admixture with steam, at a temperature in the range of about ambient to 1200° F., a pressure in the range of about 76 to 4500 psia, and a velocity in the range of about 85 ft. per second to sonic velocity; intimately mixing together the two reactant streams and vaporizing without burning a controlled amount in the range of about 0 to 100 vol.% of the liquid carrier in said pre-mix zone to produce a multiphase mixture at a temperature below its autoignition temperature; and discharging the resulting multiphase mixture into the reaction zone of the partial oxidation gas generator at a discharge velocity which is greater than the flame propogation velocity and wherein each pre-mix chamber except for the first chamber in the line comprises a coaxial cylindrical body inlet portion and a coaxial at least partially converging frusto-conical outlet portion that may optionally develop into a straight cylindrical portion and the first pre-mix chamber in the line has a converging inlet portion, and a straight coaxial cylindrical body portion that discharges through a circular orifice directly into the next in line coaxial pre-mix chamber and the step of intimately mixing together said slurry of solid carbonaceous fuel with said free-oxygen containing gas occurs by passing said materials through said pre-mix zone and exit nozzle at the downsteam end of the burner while repeatedly changing the velocity of the multiphase mixture.

4,338,100

DEAERATOR ASSEMBLY

John M. Wersosky, Dover, and Frederick I. Wakefield, Durham, both of N.H., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 28, 1980, Ser. No. 201,448
Int. Cl.³ C02B *1/10*
U.S. Cl. 55—18 **22 Claims**



19. A method of deaerating a flow of liquid including the steps of; spreading the liquid over a plurality of downwardly sloping cone-shaped dispersion members (**12***a–d*) stacked on top of each other and in spaced relationship to each other, dividing the flow of liquid through openings (**16**) extending through the dispersion members (**12***a–c*) into respective flows over the respective dispersion members (**12***a–c*) and over the respective edges (**24**) thereof whereby the liquid flow is spread into a thin film, allowing the entrapped fluids within the liquid to escape from the liquid film, and characterized by damming

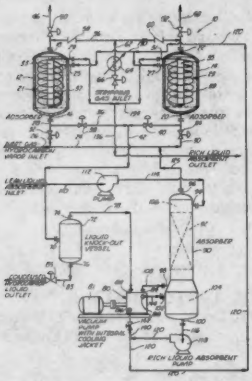
the liquid flow over the upper surface of the dispersion members (12*a–d*) by cylindrical walls (18, 20) extending upwardly therefrom and spaced from the edges (24) thereof and overflowing the liquid over the walls (18, 20) to completely spread the flow of liquid over the upper surface of the dispersion members (12*a–d*) below the walls (18, 20).

4,338,101

PROCESS AND APPARATUS FOR RECOVERING HYDROCARBONS FROM INERT GAS-HYDROCARBON VAPOR MIXTURES

Willard N. Tuttle, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Aug. 3, 1981, Ser. No. 289,511
Int. Cl.[3] B01D *53/04, 53/14*
U.S. Cl. 55—48 21 Claims



1. A process for recovering hydrocarbons from an inlet inert gas-hydrocarbon vapor mixture comprising the steps of:

(a) flowing said inlet mixture through a first bed of solid absorbent having an affinity for hydrocarbons whereby hydrocarbons are adsorbed on said bed and a residue gas stream comprised of substantially hydrocarbon-free inert gas is produced;

(b) removing said substantially hydrocarbon-free inert gas from said bed of adsorbent;

(c) evacuating a second bed of solid adsorbent having hydrocarbons and inert gas adsorbed thereon by vacuum pumping with a vacuum pump having a cooling jacket for cooling said pump and fluids pumped thereby attached thereto whereby a major portion of said hydrocarbons are desorbed from said bed and a hydrocarbon-rich inert gas-hydrocarbon mixture is produced;

(d) separating hydrocarbons which condense from said inert gas-hydrocarbon mixture from said mixture prior to pumping said mixture with said vacuum pump;

(e) passing a cooling medium through said cooling jacket of said vacuum pump to thereby cool said pump and said inert gas-hydrocarbon mixture pumped thereby;

(f) contacting the inert gas-hydrocarbon mixture produced in step (c) and pumped by said vacuum pump in an absorber with a lean liquid absorbent having an affinity for hydrocarbons whereby a major portion of the hydrocarbons are removed therefrom thereby producing a hydrocarbon-rich liquid absorbent stream and a residue gas stream comprised of inert gas and a minor portion of hydrocarbons;

(g) combining said residue gas stream produced in step (f) with said inlet inert gas-hydrocarbon mixture of step (a) whereby hydrocarbons contained therein are adsorbed on said first bed of solid adsorbent; and

(h) periodically changing the flow patterns of said inlet inert gas-hydrocarbon mixture and changing the bed of solid adsorbent being evacuated whereby when the beds through which the inlet inert gas-hydrocarbon mixture is flowing becomes loaded with adsorbed hydrocarbons, the inlet inert gas-hydrocarbon mixture is caused to flow through the bed which has just been regenerated.

16. Apparatus for recovering hydrocarbons from an inert gas-hydrocarbon vapor mixture comprising:

(a) a pair of adsorbers containing beds of solid adsorbent having an affinity for hydrocarbons and having inlet and outlet connections on opposite sides of said beds;

(b) first conduit means connected to the inlet connections of said adsorbers for conducting said inert gas-hydrocarbon vapor mixture to said adsorbers and for evacuating said adsorbers;

(c) valve means disposed in said first conduit means for selectively causing said inert gas-hydrocarbon vapor mixture to flow through one or the other of said adsorbers;

(d) second conduit means connected to the outlet connections of said adsorbers for withdrawing residue gas from said adsorbers;

(e) second valve means disposed in said second conduit means for selectively causing residue gas to be withdrawn from one or the other of said adsorbers;

(f) a vacuum pump having a suction connection and a discharge connection and having a cooling jacket for cooling said pump and the fluids pumped thereby attached thereto, said cooling jacket having a cooling medium inlet connection and a cooling medium outlet connection;

(g) means connected to the cooling medium inlet and cooling medium outlet connections of said vacuum pump heat exchanger for circulating a cooling medium therethrough;

(h) third conduit means connected between the suction connection of said vacuum pump and said first conduit means;

(i) third valve means disposed in said third conduit means for selectively communicating one or the other of said adsorbers with the section connection of said vacuum pump;

(j) liquid knockout means disposed in said third conduit means;

(k) an absorber for contacting an inert gas-hydrocarbon vapor mixture with a liquid absorbent having an inert gas-hydrocarbon vapor mixture inlet connection, a residue gas outlet connection, a lean liquid absorbent inlet connection and a rich liquid absorbent outlet connection;

(l) fourth conduit means connected between the inert gas-hydrocarbon vapor mixture inlet of said absorber and the discharge connection of said vacuum pump; and

(m) fifth conduit means connected between the residue gas outlet connection of said absorber and said first conduit means.

4,338,102

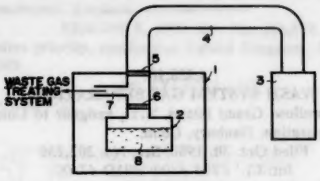
DEVICE FOR REMOVING RADIOACTIVE PARTICLES IN MOIST GAS

Katsuyuki Otsuka, Mito, and Hiroaki Miyo, Katsuta, both of Japan, assignors to Doryokuro Kakunenryo Kahatsu Jigyodan, Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,036
Claims priority, application Japan, Dec. 27, 1979, 54-171626
Int. Cl.[3] B01D *19/00, 23/24, 35/18*
U.S. Cl. 55—185 4 Claims

1. A device for removing radioactive particles from moist gas comprising a pipe means for feeding the moist gas containing radioactive solid particles to a waste gas treating system, at least one solid-gas separation filter means disposed in said pipe means, said moist gas flowing through said filter means to separate the radioactive particles from the gas, a microwave generator, a wave guide connected between said pipe means and said microwave generator so as to apply microwave from the generator to the filter means to evaporate moisture condensate on the filter, and a shielding member disposed in said wave

guide, said shielding member being made of a material capable of passing the microwave therethrough and preventing the



spreading of contamination, whereby the filter means is prevented from being clogged by the moisture condensate.

4,338,103

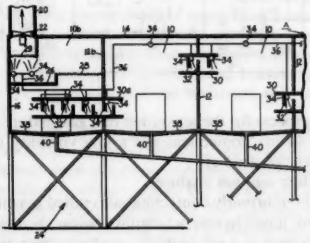
SCRUBBER

Leonard B. Fuller, P.O. Box 810, Amity, Oreg. 97101

Continuation of Ser. No. 74,914, Sep. 13, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,255

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—259 **5 Claims**



1. A scrubber for removing hydrocarbons and particulate matter from a gas, comprising:

(a) a plurality of substantially enclosed chambers having a predetermined first cross-sectional area and an axis of flow which is perpendicular to the plane of said first cross-sectional area;

(b) said chambers being interconnected to one another end-to-end along said axis of flow, and having common baffle walls one of which is located between each adjacent pair of chambers, each of said baffle walls defining an opening passing therethrough each of said openings being offset with respect to the opening passing through an adjacent baffle wall;

(c) a plurality of hollow elongate baffle tubes, one passing through each of said openings in said baffle walls, each having a predetermined second cross-sectional area lying in a plane which is parallel to the plane of said first cross-sectional area and an axis of flow which is perpendicular to the plane of said second cross-sectional area;

(d) a gas inlet entering into a first end one of said chambers and a gas outlet entering into the other end one of said chambers;

(e) at least one baffle plate means located in each of said baffle tubes to restrict flow of gas therethrough;

(f) spray nozzle means placed at particular locations within said scrubber to spray said hydrocarbons and particulate matter with water to wash said hydrocarbons and particulate matter from the scrubber;

(g) wherein said first cross-sectional area is at least five times greater than said second cross-sectional area; and

(h) wherein said baffle tubes are rectangular in cross-sectional area with parallel upper and lower surfaces and parallel sides, and each of said baffle tubes has at least three of said baffle plate means each comprising rectangular plates having a width which extends between said sides and a height which does not fully extend between said upper and lower surfaces, wherein adjacent plates are alternately attached to said upper and lower surfaces respectively.

4,338,104

APPARATUS FOR DUSTING OFF GAS BY FILTRATION AND ASPIRATION CLEANING OF FILTER, AND APPLICATION TO COMBUSTION GASES

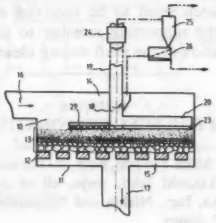
Jean-Louis Merry, Verneuil-en-Halatte, France, assignor to Charbonnages de France, France

Filed Jun. 15, 1981, Ser. No. 273,836

Claims priority, application France, Jun. 16, 1980, 80 13296

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—291 **3 Claims**



1. An apparatus for continuously removing dust from dust-loaded hot gases comprising an enclosure, a grid of a refractory material on the bottom of said enclosure, at least one fixed bed of inert coarse granular particles on said grid at a first lower level and at least one bed of inert finer granular particles on said fixed bed of coarse particles at a fixed higher level, a free volume above said two beds and an inlet conduit for the hot gases in said free volume, an outlet conduit for the gases below said grid, a hollow shaft rotatively mounted in said free volume above said bed of finer particles and comprising a vertical arm and at least one substantially horizontal arm arranged to be flush with the upper surface of said bed of finer particles, an opening along said substantially horizontal arm turned to said bed of finer particles, a means for exerting a suction action into said hollow shaft, at least one wall comprising a scrapping means radially mounted with respect to said vertical arm of said hollow shaft and penetrating into the upper surface of said bed of finer particles, at least one raking means radially mounted with respect to said vertical arm and angularly disposed with respect to said scraping means, a separating means of the dust from the granular particles sucked through said hollow shaft and a means for returning said particles to said bed of finer particles at said fixed higher level.

4,338,105

BEARING FOR FILTER BAG SUPPORT ARRANGEMENT

Leonard J. O'Dell, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 5, 1981, Ser. No. 290,356

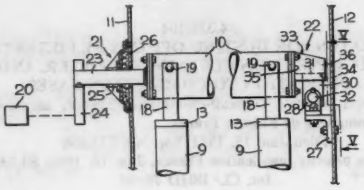
Int. Cl.³ B01D *46/04*

U.S. Cl. 55—304 **6 Claims**

1. In a baghouse having a housing defining a gas cleaning chamber, a horizontally extending shaker shaft mounted to support a plurality of bag-shaped filter elements within the gas cleaning chamber, and shaker drive and bearing means operatively connected to one end of the shaft for imparting rotational oscillation to the shaft to shake the filter elements during filter cleaning operations, wherein the improvement comprises a bearing assembly supporting the other end of the shaft, including:

stationary mounting means within the gas cleaning chamber;

a supporting member having an upwardly extending knife-edge portion generally aligned with the longitudinal axis of the shaft and pivotally connected to said mounting means for movement about a generally horizontal axis extending perpendicular to said axis of the shaft; and



a shaft supporting block affixed to the shaft having an inverted V-shaped notch sized to be received on said knife-edge portion of the supporting member to accommodate rotational oscillation of the shaft during cleaning operations.

4,338,106

CANISTER FOR FUEL EVAPORATIVE EMISSION CONTROL SYSTEM

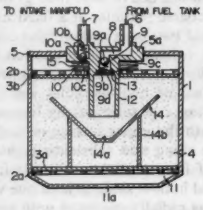
Junzi Mizuno; Akira Fukami, both of Okazaki; Hiroki Noguchi, Oobu, and Takeshi Ishii, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Nov. 5, 1980, Ser. No. 203,570

Claims priority, application Japan, Nov. 9, 1979, 54-145802

Int. Cl.[3] **B01D** *53/04;* **F02M** *37/00*

U.S. Cl. 55—316 **9 Claims**



1. A canister for a fuel evaporative emission control system of an automotive vehicle, comprising:

a vessel;

an adsorbent layer disposed in said vessel for adsorbing vaporized fuel;

a vaporized fuel inlet conduit mounted at one end of said vessel and having an end portion inserted in said adsorbent layer; and

a deflector of a conical frustum shape spreading toward an edge portion of one end of said vessel and having a bottom faced to an end of said vaporized fuel inlet conduit;

wherein the ratio (f/e) of the distance (f) between said end of said vaporized fuel inlet conduit and the surface of said bottom of said deflector to the inner diameter (e) of said end portion of said vaporized fuel inlet conduit is in the range between 0.7 and 1.4, the ratio (S1/S2) of the horizontal cross-sectional area (S1) of an upper end of said deflector having a maximum diameter (d1) to the horizontal cross-sectional area (S2) of said adsorbent layer having a diameter (d2) in said vessel is in the range between 0.4 and 0.6, and the ratio (a/b) of the distance (a) between the upper end of said deflector and an upper surface of said adsorbent layer to the distance (b) between an upper end of said deflector and a side surface of said adsorbent layer is in the range between 0.8 and 1.5.

4,338,107

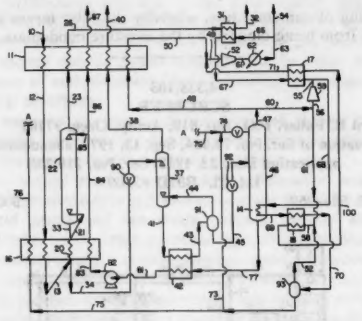
WASH SYSTEM GAS SEPARATION

Brian R. Swallow, Grand Island, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 30, 1980, Ser. No. 202,238

Int. Cl.[3] **F25J** *3/00;* **B01D** *47/00*

U.S. Cl. 62—17 **4 Claims**



1. In a process for the separation of a gas mixture containing a high volatility component and a low volatility component comprising the steps of

(a) cooling said gas mixture;

(b) countercurrently contacting said cooled gas mixture with a wash liquid having a volatility below the low volatility component in a substantially adiabatic absorption zone to absorb the low volatility component and pass the high volatility as overhead product and the mixture of wash liquid and low volatility component as a bottoms liquid;

(c) reducing the pressure of the bottoms liquid from the absorption zone;

(d) fractionating the bottoms liquid recovered from the absorption zone in a fractionation zone to recover an overhead gas comprising the low volatility component and bottoms liquid comprising the wash liquid;

(e) recirculating at least part of the bottoms liquid recovered from the fractionation zone as the wash liquid for the absorption zone;

the improvement which comprises:

(i) passing the cooled gas mixture of step (a) upwardly through a plurality of passages of an isothermal absorption zone for removal of a major portion of the low volatility component prior to passage to said adiabatic absorption zone;

(ii) simultaneously passing the bottoms liquid of step (b) downwardly through the same passages of said isothermal absorption zone as is flowing the cooled gas mixture;

(iii) maintaining a relative flow velocity between the upward passing cooled mixture and the downwardly passing bottoms liquid so as to avoid liquid entrainment;

(iv) passing a refrigerant stream in indirect heat exchange relationship with the upwardly passing cooled mixture and the downwardly passing bottoms liquid whereby the unavoidable heat of absorption accompanying the gas-liquid in the isothermal absorption zone is removed prior to passage of said gas mixture to said adiabatic absorption zone.

4,338,108

PROCESS FOR THE RECOVERY OF ARGON

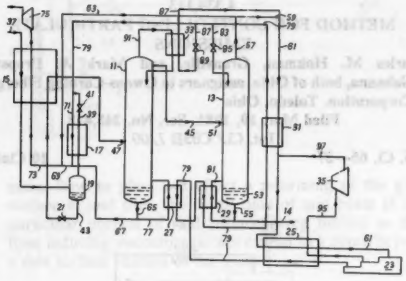
Wieslaw H. Isalski, Sale, and Gregory J. Ashton, Stockport, both of England, assignors to Petrocarbon Developments Ltd., Manchester, England

Filed Jul. 8, 1980, Ser. No. 166,834

Claims priority, application United Kingdom, Jul. 12, 1979, 7924348

Int. Cl.³ F25J 3/02

U.S. Cl. 62—22 14 Claims



1. A process for the recovery of argon from a tail gas stream remaining after treating an ammonia synthesis purge gas for the recovery therefrom of hydrogen values, said tail gas stream being at super-atmospheric pressure and containing methane, argon and nitrogen and residual hydrogen and said process comprising:

(i) separating said tail gas stream by partial condensation into a condensate containing methane, argon and nitrogen and an uncondensed gas stream containing substantially all of the residual hydrogen in said tail gas stream, said separation being effected by cooling said tail gas stream in a plurality of heat exchange steps, in which condensed gas is separated out after at least the penultimate heat exchange step and thereafter the uncondensed gas is passed upwardly in the final heat exchange step with condensed material formed therein flowing downwards in contact with the rising gas stream and mixing with said condensed gas to form said condensate; and recovering said uncondensed gas stream containing substantially all of the residual hydrogen from said final heat exchange step

(ii) expanding and partially evaporating said condensate to produce a fractioning stream;

(iii) separating said fractioning stream by fractional distillation at sub-ambient temperature and superatmospheric pressure in two distillation columns in series, wherein in the first distillation column a liquid methane stream is separated as the bottoms product and a gaseous stream containing nitrogen and argon is recovered as the overhead product and passed without an intermediate pressure reduction step to the second distillation column in which it is fractionated to produce argon as the bottoms product and a gaseous nitrogen stream as overhead product;

and wherein the heat for reboil and the cooling for reflux for the distillation columns are provided by a single heat pump cycle in which the heat transfer fluid is provided from the said gaseous nitrogen stream;

the cold requirements of the process are supplied by an open refrigeration cycle in which the refrigerant is provided from the said gaseous nitrogen stream;

and reflux in the final heat exchange step in (i) is provided by evaporation of a coolant passed in indirect countercurrent heat exchange relationship with said rising gas, said coolant comprising a stream containing liquid nitrogen provided from said gaseous nitrogen stream and the bubble point of which has been lowered by combining it with a gas stream obtained by expanding gas provided from the uncondensed gas stream obtained in step (i).

4,338,109

COUNTER CURRENT CRYSTALLIZATION PROCESS

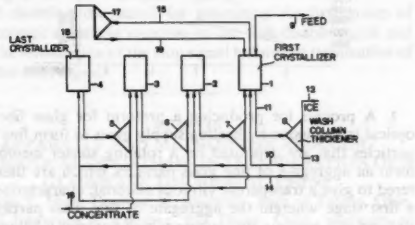
Henricus A. C. Tijssen, Son, and Bernardus G. M. van der Malen, Hagestein, both of Netherlands, assignors to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel B.V., Utrecht, Netherlands

Filed Jan. 31, 1980, Ser. No. 117,213

Claims priority, application United Kingdom, Feb. 22, 1979, 7906342

Int. Cl.³ B01D 9/04

U.S. Cl. 62—541 6 Claims



1. In a continuous multistage process whereby an aqueous solution is successively led through a number of succeeding stages to crystallize ice in each of said stages and the ice formed is led in reverse direction through said stages whereby the ice crystals are separated from the mother liquor in a final separation stage, the ice crystals being rejected and the mother liquor from the last stage being recovered as a product, the improvement comprising introducing in one stage a portion of the crystals formed in a preceding stage other than the immediately preceding stage, said portion having a mean crystal size larger than the mean crystal size of the crystals formed in said one stage without said introduction of said portion.

4,338,110

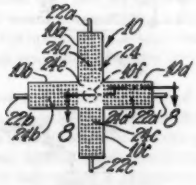
BUSHING FOR PRODUCING GLASS FIBERS

William M. Babbitt, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 190,119, Sep. 24, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,589

Int. Cl.³ C03D 37/025

U.S. Cl. 65—1 3 Claims



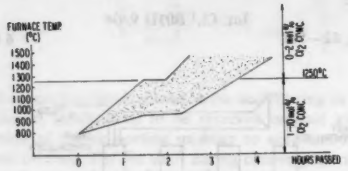
1. A bushing (**10**) useful in the drawing of glass fibers from molten glass (**14**) and comprising a tubular inlet (**10***f*) leading to a central supply space (**10***e*) and a plurality of hollow bushing branches (**10***a*, **10***b*, **10***c*, **10***d*) open to and extending radially from the supply space (**10***e*).

4,338,111

PROCESS FOR PRODUCING A GLASS PREFORM FOR OPTICAL FIBER

Takao Edahiro, Mito; Michihisa Kyoto, Yokohama; Gotaro Tanaka, Yokohama, and Toru Kuwahara, Yokohama, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Dec. 19, 1980, Ser. No. 218,226
Claims priority, application Japan, Dec. 20, 1979, 54-164704
Int. Cl.³ C03B *19/06, 32/00*
U.S. Cl. 65—18.2 1 Claim



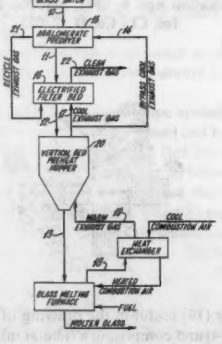
1. A process for producing a preform for glass fiber for optical transmission by heating supply gases to form fine glass particles that are deposited on a rotating starter member to form an aggregate of fine glass particles which are then sintered to give a transparent vitreous material, characterized by a first stage wherein the aggregate of fine glass particles is sintered in a gaseous atmosphere which contains a halogen or halide at a concentration of 1 to 10 mol% and which has dehydrating activity as the temperature is increased at a constant rate of 300° C./hr or less, followed by a period of time during which the aggregate is held at a temperature between about 950° C. and 1250° C. for at least 30 minutes that causes considerable shrinking of the aggregate and wherein the concentration of said halogen or halide is maintained at 1 to 10 mol%, and a second heating stage where said aggregate is heated to the virtrifying temperature during which second heating stage the concentration of said halogen or halide is reduced to 0 to 2% at a temperature above 1250° C.

4,338,112

METHOD FOR CONTROLLING PARTICULATE EMISSIONS FROM A GLASS FURNACE

Mark A. Propster, Gahanna, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 19, 1981, Ser. No. 245,302
Int. Cl.³ C03B *1/00*
U.S. Cl. 65—27 12 Claims



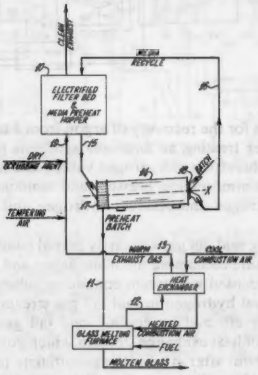
1. A process for producing glass by (1) charging to a melting furnace and melting therein a batch including the steps of compacting the batch into agglomerates, (2) drying the agglomerates, (3) forming a bed with the dried agglomerates and electrically charging the bed, (4) subsequently forming a vertical bed with the agglomerates, (5) moving the agglomerates in the vertical bed in direct contact with and countercurrently to, hot furnace exhaust gases, (6) electrically charging the spent exhaust gases which have passed through the vertical bed, and (7) passing the charged exhaust gases through the electrified bed of step (3).

4,338,113

METHOD FOR CONTROLLING PARTICULATE EMISSIONS

Charles M. Hohman, Granville, and Mark A. Propster, Gahanna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 19, 1981, Ser. No. 245,418
Int. Cl.³ C03B *1/00*
U.S. Cl. 65—27 10 Claims



1. A process for producing glass by charging to a melting furnace and melting therein a particulate glass batch, including the steps of

(1) electrically charging a bed of heat transfer media,

(2) electrically charging dried exhaust gases from the glass melting furnace,

(3) passing the charged exhaust gases through the electrified bed of media, and p1 (4) bringing the particulate glass batch in direct contact with the heat transfer media to heat the glass batch prior to charging the furnace.

4,338,114

LASER TREATMENT METHOD FOR IMPARTING INCREASED MECHANICAL STRENGTH TO GLASS OBJECTS

M. Clifford Brockway, and Craig T. Walters, both of Columbus, Ohio, assignors to Liberty Glass Company, Sapulpa, Okla.

Filed Aug. 21, 1980, Ser. No. 180,140
Int. Cl.³ C03B *29/02*
U.S. Cl. 65—28 29 Claims

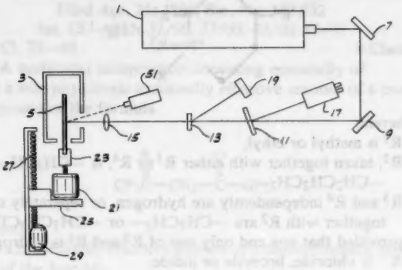
1. A method for imparting increased mechanical strength to a glass object having imperfections in a surface thereof, comprising the steps of:

heating the object to a temperature above the strain point of the glass;

generating a laser beam having a wavelength absorbable by the glass; and

impinging said beam on all portions of said surface from which it is desired to remove said imperfections, the power density of said beam being sufficient to rapidly heat a surface stratum of said glass to establish a thermal gradi-

ent therein whereby the viscosity at a depth from said surface sufficient to encompass said imperfections is low enough that the stress induced by the surface tension of the glass at the sites of said imperfections is sufficient to



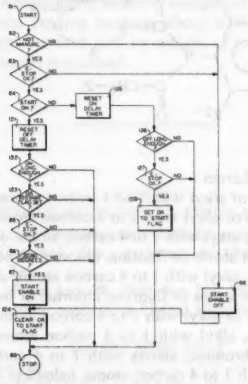
cause flow to glass and effect a reforming of the glass surface at said sites, the dwell time of said beam at any particular portion of said surface being limited so that flow inducing viscosities do not extend to a depth beyond a thin surface stratum of the glass.

4,338,115

STARTING SAFETY CONTROL FOR A GLASSWARE FORMING MACHINE

Daniel S. Farkas, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 23, 1980, Ser. No. 199,897
Int. Cl.³ C03B 9/40
U.S. Cl. 65—29 **16 Claims**



1. In a machine for forming articles of glassware from gobs of molten glass, the machine including forming means responsive to a plurality of control signals for controlling the machine in a start routine, a run routine for forming articles of glassware from the gobs of molten glass, and a stop routine; a means for generating a start signal; means for generating a stop signal; a means responsive to said start signal for generating a first group of the control signals for controlling the machine in the start routine; and a means responsive to said stop signal for generating a second group of the control signals for controlling the machine in the stop routine, a control means comprising: means responsive to continued generation of the start signal and the initiation and the termination of the stop signal for disabling the means for generating a first group of the control signals whereby the machine is prevented from automatically restarting after a stop.

12. A method of controlling a machine for forming articles of glassware from gobs of molten glass, the machine including forming means responsive to a plurality of control signals for controlling the machine in a start routine, a run routine for forming articles of glassware from the gobs of molten glass, and a stop routine; a means for generating a start signal; a means for generating a stop signal; a means responsive to the start signal for generating a first group of the control signals for controlling the machine in the start routine and the run routine; and a means responsive to the stop signal for generating a second group of control signals for controlling the machine in the stop routine, the method comprising the steps of

generating a flag disable signal in response to the initiation of the start signal;

generating a flag enable signal in response to the termination of the start signal;

enabling the means for generating the first group of the control signals in response to the generation of the start signal and the flag enable signal;

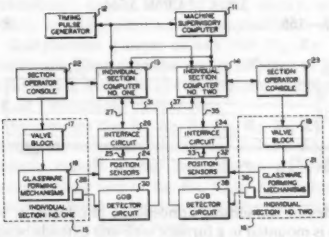
and disabling the means for generating the first group of control signals in response to the flag disable signal and the termination of the stop signal before the termination of the start signal.

4,338,116

APPARATUS AND METHOD FOR REDUCING MECHANICAL DEAD TIMES IN THE OPERATION OF A GLASSWARE FORMING MACHINE

Norman T. Huff; Donivan M. Shetterly, both of Toledo, Ohio, and Lawrence I. Kalisher, San Diego, Calif., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 9, 1981, Ser. No. 241,823
Int. Cl.³ C03B 9/40
U.S. Cl. 65—29 **21 Claims**



1. In a glassware forming machine having glassware forming means for forming glassware articles from gobs of molten glass in a timed series of predetermined forming steps in response to a plurality of control signals, and control means for generating the control signals, the improvement comprising:

a first sensor means for generating a first output signal representing the operation of one of the glassware forming means associated with one of the forming steps;

a second sensor means for generating a second output signal representing the operation of another one of the glassware forming means associated with another one of the forming steps; and

means responsive to said first and second output signals for generating an indication representing the mechanical dead time between the operations of said one glassware forming means and said another glassware forming means.

8. A method of controlling a glassware forming machine having glassware forming means of forming glassware articles from gobs of molten glass in a timed series of predetermined forming steps in response to a plurality of control signals, and control means for generating the control signals, comprising the steps of:

a. generating a first output signal representing the operation

of one of the glassware forming means associated with one of the forming steps;

b. generating a second output signal representing the operation of another one of the glassware forming means associated with another one of the forming steps; and

c. determining the mechanical dead time between the operations of said one glassware forming means and said another glassware forming means from said first and second output signals.

15. In a glassware forming machine having glassware forming means for forming glassware articles from gobs of molten glass in a timed, predetermined sequence of forming steps in response to a plurality of control signals, and control means for generating the control signals, means for changing the timing of the control signals comprising:

a first sensor means for generating a first output signal representing the operation of one of the glassware forming means associated with one of the forming steps;

a second sensor means for generating a second output signal representing the operation of another one of the glassware forming means associated with another one of the forming steps;

means responsive to said first and second output signals for generating a signal representing at least a portion of the mechanical dead time between the operations of said one glassware forming means and said another glassware forming means; and

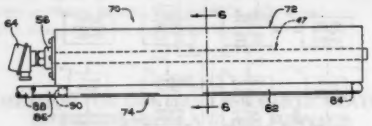
means for changing the timing of at least one of the control signals to reduce the mechanical dead time.

4,338,117

ATMOSPHERE SENSING DEVICE FOR A FURNACE

Edward P. Savolskis, Carlisle, and Terrence L. Sanders, Boiling Springs, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 21, 1981, Ser. No. 227,015
Int. Cl.³ C03B 5/24
U.S. Cl. 65—158 **8 Claims**



1. In a device for sensing atmosphere in a furnace, wherein the device is mounted in a furnace wall and extends beyond the interior surface of the furnace wall, the device is of the type having a ceramic block made of a material substantially nonreactive with the furnace atmosphere; and a probe for sensing the furnace atmosphere, the probe mounted in the block to minimize thermal shock to the probe, the improvement comprising:

conduit means adjacent a substantial length of the probe, said conduit means having inlet and outlet ends accessible from the block exterior for moving a cooling medium through said conduit means to minimize thermal shock and thermal damage to the probe and said conduit means formed of a metal or metal alloy having a wall thickness sufficient to provide substantially rigid support to the ceramic block.

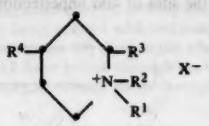
4,338,118

PLANT GROWTH REGULATION

Eriks V. Krumkalns, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 23, 1981, Ser. No. 276,588
Int. Cl.³ A01N 43/40
U.S. Cl. 71—76 **9 Claims**

1. A method for reducing the height and lateral braching of a cotton plant comprising applying to a plant or to the locus where a plant is growing an effective amount of a compound of the formula



wherein:

R^1 is methyl or ethyl;

R^2, taken together with either R^3 or R^4, is $—CH_2CH_2—$ or $—CH_2CH_2CH_2—$;

R^3 and R^4 independently are hydrogen, or separately taken together with R^2 are $—CH_2CH_2—$ or $—CH_2CH_2CH_2—$; provided that one and only one of R^3 and R^4 is hydrogen;

X^- is chloride, bromide or iodide.

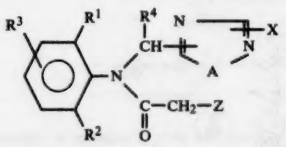
4,338,119

N-DIAZOLYLALKYL-HALOACETANILIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Jörg Stetter; Klaus Ditgens, both of Wuppertal; Rudolf Thomas, Haan; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,981
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842846
Int. Cl.³ A01N 9/22; C07D 271/06
U.S. Cl. 71—92 **30 Claims**

1. N-Diazolylalkyl-haloacetanilide of the formula



(I)

wherein

A is oxygen wherein

R is hydrogen or alkyl with 1 to 4 carbon atoms,

R^1 is hydrogen or alkyl with 1 to 4 carbon atoms,

R^2 is hydrogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms or fluorine, chlorine or bromine,

R^3 is hydrogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms or fluorine, chlorine or bromine,

R^4 is hydrogen or alkyl with 1 to 4 carbon atoms,

X is hydrogen, alkyl with 1 to 4 carbon atoms, fluorine, chlorine or bromine, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, haloalkyl with 1 or 2 carbon atoms and up to 5 halogen atoms selected individually from fluorine, chlorine and bromine, alkenyl with 2 to 4 carbon atoms, alkynyl with 2 to 4 carbon atoms, alkoxycarbonyl with 1 to 4 carbon atoms in the alkoxy group dialkylamino with 1 to 4 carbon atoms in each alkyl moiety, cyano, phenyl, substituted phenyl, phenoxy, substituted phenoxy, phenylthio or substituted phenylthio, the substituents for the phenyl, phenoxy and phenylthio moieties being individually selected from halogen and alkyl with 1 or 2 carbon atoms, and

Z is chlorine, bromine or iodine,

and in which the diazolyl radical is bonded via a carbon atom, and acid addition salts thereof.

27. Method of combating weeds which method comprises applying to these weeds, or ther habitat a herbicidally effective amount of an N-diazolylalkyl-haloacetanilide compound as claimed in claim 1.

4,338,120

HALO-SUBSTITUTED THIONOACYL KETONE HERBICIDAL ANTIDOTES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

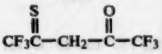
Filed Apr. 21, 1980, Ser. No. 142,532

Int. Cl.³ A01N *31/00, 37/00, 43/00, 43/40*

U.S. Cl. 71—98 4 Claims

1. A herbicidal composition consisting essentially of

(a) a non-phytotoxic antidotally effective amount of a compound of the formula



and

(b) a herbicidally effective amount of a thiolcarbamate herbicide of the formula

in which

R_2 is selected from the group consisting of alkyl having 1–6 carbon atoms;

R_3 is selected from the group consisting of alkyl having 1–6 carbon atoms, and cyclohexyl; or

R_2 and R_3 together form an alkylene group having 6 carbon atoms; and

R_4 is selected from the group consisting of alkyl having 1–6 carbon atoms, 2,3,3-trichloroallyl, and chlorobenzyl wherein said antidote compound is present in an amount ranging between about 0.001 to 30 parts by weight for each part by weight of the thiolcarbamate herbicidal compound.

4,338,121

LOOSENING AGENTS FOR FRUIT OF PLANTS

Robert Baxter, Sittingbourne, England, and Ronald W. A. Leach, Kingwood, Tex., assignors to Shell Oil Company, Houston, Tex.

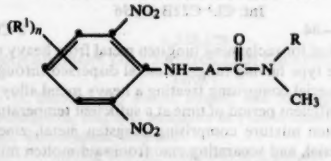
Filed Aug. 28, 1980, Ser. No. 182,184

Claims priority, application United Kingdom, Aug. 28, 1979, 7929767

Int. Cl.³ A01N *37/18*

U.S. Cl. 71—118 3 Claims

1. A method of loosening fruit on a plant, which comprises treating the fruit-bearing plant or part thereof with an amount effective for the purpose of a compound of the formula



wherein A is —CH_2—CH_2— or —$CH(CH_3)$—, R is hydrogen or hydroxyl and n is zero or one, with the proviso that when A is —CH_2—CH_2—, n is zero, and when A is —$CH(CH_3)$—

(a) R is hydrogen or hydroxyl and $(R^1)n$ is 4-methyl, or

(b) R is hydrogen, and $(R^1)n$ is 3-acetylamino, or is 4-fluoro.

4,338,122

BIOCIDAL 2-ARYL-1,3-CYCLOPENTANEDIONE COMPOUNDS AND ALKALI METAL AND AMMONIUM SALTS THEREOF

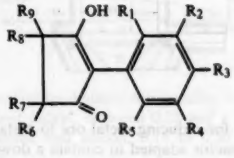
Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 78,923, Sep. 26, 1979, Pat. No. 4,283,348, which is a continuation-in-part of Ser. No. 944,995, Sep. 22, 1978, abandoned. This application Oct. 16, 1980, Ser. No. 197,600

Int. Cl.³ A61K *31/12*; C07C *49/427*; A01N *31/00*

U.S. Cl. 71—122 58 Claims

1. A compound of the formula:



and tautomeric mixtures and alkali metal and ammonium salts thereof, wherein:

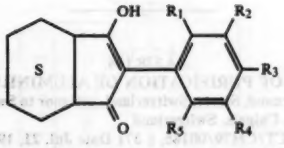
R_1 is an alkyl, haloalkyl, halogen or polyhaloalkyl group;

R_2, R_3, R_4 and R_5 are individually hydrogen, nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl, amido, amino or haloalkyl group;

R_6, R_7, R_8 and R_9 are individually hydrogen, or either an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl or phenyl group wherein the permissible substituents are one or more alkyl, alkanoyl, cycloalkyl, cycloalkenyl, cyano, halogen, nitro, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfinyl, alkylsulfonyl, acrylamido or dialkylamino groups; or any two R_6, R_7, R_8 or R_9 substituents taken together are an alkylene or alkenylene group having from 2 to 20 carbon atoms completing a 3, 4, 5, 6 or 7 membered carbon ring;

with the provisos that R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 substituents individually may not include more than ten aliphatic carbon atoms, and that an alkenylene chain formed by any two of R_6, R_7, R_8 or R_9 resulting in a six membered fused polycyclic ring structure may not have more than one double bond.

26. An acaricidal or herbicidal composition comprising an acceptable carrier and as the active toxicant an acaricidally or herbicidally effective amount of a compound of the formula:



and tautomeric mixtures and alkali metal and ammonium salts thereof, wherein:

R_1 is an alkyl, haloalkyl, halogen or polyhaloalkyl group;

R_2, R_3, R_4 and R_5 are individually hydrogen, nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl, amido, amino or haloalkyl group;

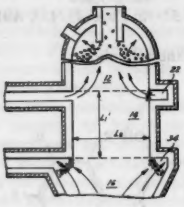
with the proviso that R_1, R_2, R_3, R_4 and R_5 substituents may not individually include more than ten aliphatic carbon atoms.

4,338,123

METHOD AND APPARATUS FOR THE REDUCTION OF METAL ORES

Juan L. San Jose-Alcalde, Monterrey, Mexico, assignor to Hylsa, S.A., Monterrey, Mexico

Filed Feb. 23, 1981, Ser. No. 237,446
Int. Cl.³ C21B *13/02*
U.S. Cl. 75—34 27 Claims



1. Apparatus for reducing metal ore to metal comprising a vertical shaft reactor adapted to contain a downwardly moving bed of particles of said metal ore said reactor comprising

a reduction zone in the upper portion thereof and a cooling zone in the lower portion thereof,

an intermediate zone extending from the top of the cooling zone to the bottom of the reduction zone,

a first supply conduit connected to the reactor near one end of the reduction zone for feeding hot reducing gas to said bed at a first point of injection,

first means connected to the reactor near the other end of the reduction zone for removing reducing gas from said bed at a first point of removal,

a second supply conduit connected to the reactor near one end of the cooling zone for feeding cooling gas to said bed at a second point of injection,

second means connected to the reactor near the other end of the cooling zone for removing cooling gas from said bed at a second point of removal,

said intermediate zone having an equivalent height equal to the shortest distance along the vertical axis of the reactor between either the first point of injection or first point of removal, whichever is closest to the bottom of the reduction zone, and either the second point of injection or second point of removal, whichever is closest to the top of the cooling zone, and an equivalent diameter equal to the shortest distance between the effective walls of said intermediate zone,

the ratio of said equivalent height to said equivalent diameter being in the range of 0.5 to 2.0.

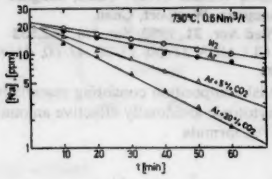
4,338,124

METHOD OF PURIFICATION OF ALUMINIUM MELTS

Jean D. Bornand, Sierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

PCT No. PCT/CH79/00145, § 371 Date Jul. 21, 1980, § 102(e) Date Jul. 17, 1980, PCT Pub. No. WO80/01082, PCT Pub. Date May 29, 1980
PCT Filed Nov. 19, 1979, Ser. No. 199,730
Claims priority, application Switzerland, Nov. 21, 1978, 11914/78
Int. Cl.³ C22B *23/06*
U.S. Cl. 75—68 R 7 Claims

1. A method of purifying a melt of aluminum and its alloys by introducing an active gas mixture into the melt at atmospheric pressure comprising feeding a gas mixture comprising at least one non-reactive gas as a carrier gas and from about 4 to 10% by volume carbon dioxide at a rate of from about 0.4 to 1.0 normal cubic meters per ton of melt treated at a melt temperature of from about 730° to 780° C. for a melt contact time of from about 3 to 60 minutes.



4,338,125

METHOD FOR THE PREPARATION OF URANIUM COMPOUNDS VIA ELECTROLYTIC AMALGAMATION OF URANIUM ION DIRECTLY FROM AN AQUEOUS SOLUTION

Chau-Ting Chang, Hsin Chu, Taiwan, assignor to Institute of Nuclear Energy Research, Taiwan

Continuation of Ser. No. 940,590, Sep. 8, 1978, abandoned, which is a continuation of Ser. No. 707,706, Jul. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 614,479, Oct. 15, 1974, Pat. No. 4,004,987. This application Aug. 28, 1979, Ser. No. 70,417
The portion of the term of this patent subsequent to Jan. 25, 1994, has been disclaimed.
Int. Cl.³ C22B *60/02*
U.S. Cl. 75—84 10 Claims

1. A method for the preparation of a uranium compound selected from the group consisting of uranium monocarbide, uranium dioxide and uranium nitride which comprises amalgamating uranium electrolytically from an aqueous solution in a cell having two compartments with an ion exchange membrane in between for the purpose of adjusting the pH during the course of the electrolysis, thermally decomposing the electrolytically obtained uranium amalgam in a vacuum or in an inert gas atmosphere and subsequently or simultaneously reacting the thermally decomposed electrolytically obtained uranium amalgam with a gas selected from methane, water vapor and nitrogen at a temperature below 1200° C. to form the desired compound.

4,338,126

RECOVERY OF TUNGSTEN FROM HEAVY METAL ALLOYS

Clarence D. Vanderpool, Towanda, and Robert P. McClintic, Monroeton, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 9, 1980, Ser. No. 157,630
Int. Cl.³ C22B *34/36*
U.S. Cl. 75—84 3 Claims

1. A method for reclaiming tungsten metal from heavy metal alloys of the type having tungsten metal dispersed throughout a matrix material comprising treating a heavy metal alloy with zinc for a sufficient period of time at a sufficient temperature to form a molten mixture comprising tungsten metal, zinc and matrix material, and separating zinc from said molten mixture to form a powder containing tungsten metal, said heavy metal alloy consisting essentially of 80 to 95 percent tungsten metal and the balance a matrix material selected from the group consisting of chromium, iron, cobalt, nickel, copper, mixtures and alloys thereof.

4,338,127

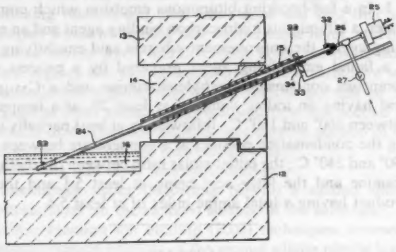
ADDITION AND MEASUREMENT OF GASES DISSOLVED IN MOLTEN METALS

Ties Allersma, Pittsburgh, and James E. Simpson, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 968,604, Dec. 11, 1978, Pat. No. 4,239,532. This application May 27, 1980, Ser. No. 153,386

Int. Cl.³ C22B 9/12

U.S. Cl. 75—93 R 10 Claims



1. A method of dissolving at least one gas in a liquid, comprising the steps of:

providing a probe having a passageway defined by a continuous outer wall, the probe having a first outer wall portion with the remaining outer wall portion defined as a second outer wall porion, the first outer wall portion includes at least two components which make the first outer wall portion substantially impermeable to the liquid and to the at least one gas, and the second outer wall portion has one of the at least two components removed which makes the second outer wall portion substantially permeable with respect to the at least one gas and substantially impermeable with respect to the liquid;

submerging at least the second outer wall portion of the probe in the liquid; and

allowing the at least one gas to permeate through the second outer wall portion of the probe into the liquid.

4,338,128

LOW ALLOY WHITE CAST IRON

Jean C. Farge, Montreal, and Robert Fortin, Mont Joli, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Apr. 9, 1980, Ser. No. 138,752

Claims priority, application Canada, Jun. 13, 1979, 329649

Int. Cl.³ C22C 33/00

U.S. Cl. 75—123 CB 2 Claims

1. A low alloy white cast iron consisting, in weight percent, of about 2.5 to 4% carbon, 0.3 to 0.8% silicon, 0.3 to 1.0% manganese and 1.7 to 3.5% nickel, the rest being iron except for incidental impurities commonly found in cast iron, said alloy having a microstructure consisting essentially of martensite and carbide and a minimum hardness of 600 B.H.N.

4,338,129

PRODUCTION OF VERMICULAR GRAPHITE CAST IRON

Joao D. Garcez, Sao Paulo, Brazil, and Michael D. Bryant, Bromsgrove, England, assignors to Foseco International Limited, Birmingham, England

Filed Dec. 5, 1980, Ser. No. 213,490

Claims priority, application United Kingdom, Dec. 19, 1979, 7943697

Int. Cl.³ C22C 33/08

U.S. Cl. 75—130 R 14 Claims

1. A molten metal treatment agent formed by compacting a mixture comprising particulate iron, magnesium, titanium and rare earth.

4,338,130

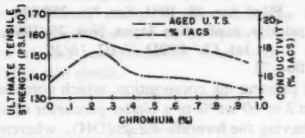
PRECIPITATION HARDENING COPPER ALLOYS

Richard A. Burkett, 1001 Rohlwing Rd., Rolling Meadows, Ill. 60008

Filed Nov. 20, 1980, Ser. No. 208,679

Int. Cl.³ C22C 9/06

U.S. Cl. 420—486 5 Claims



1. A precipitation hardenable copper alloy consisting of 2 to 9 weight percent nickel, between 0.05 and 2 weight percent each of aluminum, and silicon, 0.18 to 0.50 chromium and balance copper.

4,338,131

NICKEL-BORON BINARY AMORPHOUS ALLOYS

James E. Briggs, Jr., Budd Lake, and Ryusuke Hasegawa, Morristown, both of N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 19, 1980, Ser. No. 122,547

Int. Cl.³ C22C 19/03

U.S. Cl. 148—403 4 Claims

1. A binary metal alloy that is at least 50% amorphous having mechanical hardness ranging from about 950 to 1320 kg/mm² and melting temperatures ranging from about 1000°–1140° C., characterized in that the alloy consists of the binary composition Ni_2B_b, where "a" has values of about 81 to 82, 75 and 59 to 72, atom percent and "b" has values of about 18 to 19, 25 and 28 to 41.

4,338,132

PROCESS FOR FABRICATING FIBER-REINFORCED METAL COMPOSITE

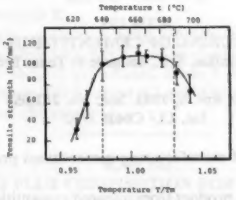
Hideho Okamoto, Toyonaka, and Ken-ichi Nishio, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 25, 1979, Ser. No. 78,896

Claims priority, application Japan, Sep. 27, 1978, 53-119716

Int. Cl.³ B22F 3/00

U.S. Cl. 75—208 R 15 Claims



1. A process for fabricating a fiber-reinforced metal composite, which comprises laminating a plurality of sheet-like precomposites comprising bundles of filaments of metal reinforcing fibers, among the filaments of which a matrix metal powder having an average particle size of not more than ½ of the diameter of the fiber is spread, and among the bundles of which a

matrix metal powder having an average particle size of 2 to 10 times the diameter of the fiber is spread, and hot-pressing the resulting laminate either in a vacuum or in an atmosphere of an inert gas.

4,338,133

JET PRINTING INK COMPOSITION

Tsunehiko Toyoda, Yokohama; Tokio Matsumoto, Tokyo, and Toshiaki Arakawa, Yokosuka, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Apr. 28, 1981, Ser. No. 258,395
Claims priority, application Japan, Nov. 25, 1980, 55/165657
Int. Cl.³ C09D *11/02, 11/10*
U.S. Cl. 106—22 10 Claims

1. A jet printing ink composition, which comprises:

(a) from 2 to 60 wt % of a binder precursor of an alkoxysilane having the formula: $R_{4-n}Si(OH)_n$; wherein n is 0 to 2 and R is a C_1–C_4 alkoxy group, methoxyethoxy, ethoxyethoxy or phenoxy; or an oligomer thereof;

(b) from 25 to 95 wt % of a solvent for said alkoxysilane or oligomer thereof selected from the group consisting of a lower aliphatic alcohol, a glycol monoether and mixtures thereof;

(c) from 0.001 to 5 wt % of a solvent soluble acid selected from the group consisting of hydrochloric acid, hydrofluoric acid, sulfuric acid, boric acid, phosphoric acid, fumaric acid, benzenesulfonic acid, paratoluenesulfonic acid and mixtures thereof; and

(d) from 0.1 to 5 wt % of a solvent soluble dyestuff.

4,338,134

PROCESS FOR BINDING WASTE LIQUOR OR SLUDGE

Ludbert Graf zu Münster, Munich, Fed. Rep. of Germany, assignor to Handelskontor Ludbert Graf zu Munster GmbH & Co., Munich, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,547
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930602
Int. Cl.³ B09B *1/00;* G21F *9/00;* C04B *11/00, 7/34*
U.S. Cl. 106—85 12 Claims

1. In the process for binding waste liquor or sludge comprising forming a mixture of hydraulic mortar and waste liquor or sludge in the presence of inhibiting zinc or phosphorus compounds and allowing said mixture to set, the improvement consisting of subjecting said mixture of hydraulic mortar and waste liquor or sludge to a milling operation before said mixture is allowed to set.

4,338,135

MICROWAVE CURING OF CEMENTITIOUS MATERIAL

Hilbert F. Cook, Dallas, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Apr. 6, 1981, Ser. No. 251,053
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—97 11 Claims

1. A method of manufacturing cementitious product which comprises:

(a) forming the product from uncured cementitious material;

(b) moist curing the product while maintaining said product free of liquid water by one of low pressure steam, water vapor or autoclave curing for a period sufficient to achieve at least the substantial hydration of said cementitious material; and

(c) thereafter applying microwave radiation energy to said cementitious material for rapid cure completion and drying.

4,338,136

METHOD OF MAKING FAST-BREAKING BITUMINOUS EMULSIONS

Pierre Goullet, and Pierre Scotte, both of Toulouse, France, assignors to APC-Azote et Produits Chimiques, S.A., Toulouse, France

Continuation-in-part of Ser. No. 832,852, Sep. 13, 1977, abandoned. This application Mar. 15, 1979, Ser. No. 20,893
Claims priority, application France, Sep. 16, 1976, 76 27780
Int. Cl.³ C09D *3/24*
U.S. Cl. 106—273 N 18 Claims

1. In a fast-breaking bituminous emulsion which comprises water, a bituminous hydrocarbon binding agent and an emulsifying agent, the improvement wherein said emulsifying agent is a liquid emulsifying agent prepared by a process which comprises condensing diethylenetriamine and a C_{12-18} fatty acid having an iodine value of at least 25, at a temperature between 160° and 180° C., followed by at least partially cyclizing the condensation product at a temperature between about 190° and 240° C.; the initial molar ratio between the diethylenetriamine and the fatty acid being at least 5:1 and the final product having a total amine index of at least 5.6.

4,338,137

ASPHALT COMPOSITION FOR AIR-BLOWING

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 20, 1981, Ser. No. 285,248
Int. Cl.³ C08L *95/00*
U.S. Cl. 106—273 R 10 Claims

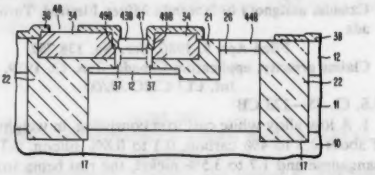
1. An asphalt composition comprising 0.01 weight percent to about 5 weight percent ferrous chloride and asphalt in an amount to equal 100 weight percent.

4,338,138

PROCESS FOR FABRICATING A BIPOLAR TRANSISTOR

Joseph R. Cavaliere, Hopewell Junction, N.Y.; Cheng T. Horng, San Jose, Calif.; Richard R. Konian, Poughkeepsie; Hans S. Rupprecht, Yorktown Heights, both of N.Y., and Robert O. Schwenker, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,611
Int. Cl.³ H01L *21/263, 21/203, 21/22, 21/31*
U.S. Cl. 148—1.5 4 Claims



1. In a process for fabricating an improved bipolar transistor in a silicon substrate of a first conductivity type, said substrate having a planar surface, a subcollector region of a second conductivity type formed in said substrate, an epitaxial layer of said second conductivity type formed on said planar surface of said substrate, and first, second and third spaced apart recessed oxide isolation regions extending through said epitaxial layer into said substrate, said process including the following steps:

a. forming a first oxide layer on said epitaxial layer;

b. utilizing a suitable block-out mask, ion implanting impurities of a second conductivity type into the epitaxial surface extending from said second recessed oxide region to said third recessed oxide region thereby forming a collector reach through region;

c. forming a first silicon nitride layer on said first oxide layer;

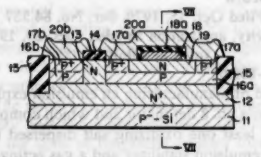
d. forming a second oxide layer on said first silicon nitride layer;
e. forming a mask having first and second spaced apart windows, said windows respectively exposing discrete regions of said second oxide layer, said first window extending over a portion of said first recessed oxide isolation region and a portion of said epitaxial layer in the direction of said second recessed oxide isolation region, said second window extending over a portion of said second recessed oxide isolation region and said epitaxial layer in the direction of said first recessed oxide isolation region;
f. utilizing reactive-ion etch techniques and said first and second windows etching said second oxide layer, said first silicon nitride layer, said first oxide layer, the oxide isolation regions and said epitaxial layer to the surface of said subcollector region, whereby a narrow portion of the epitaxial layer remains between said first and second recessed oxide isolation regions, said narrow portion of the epitaxial layer having vertical sidewalls;
g. removing said mask formed in step e;
h. chemically vapor depositing (CVD) a second silicon nitride layer on the exposed surface of the substrate;
i. utilize reaction ion etching (RIE) techniques removing predetermined portions of the second silicon nitride layer;
j. forming an oxide layer over the exposed surface of the subcollector;
k. removing the remaining portions of said second silicon nitride layer;
l. forming a layer of doped polysilicon of said second conductivity type over the exposed surface of the substrate;
m. utilizing photoresist planarizing the exposed surface of the substrate;
n. utilizing reactive ion etch (RIE) techniques etching back said photoresist and polysilicon to stop at the surface of said second oxide layer;
o. removing said second oxide layer; and
p. forming by thermal oxidation an oxide coating on said polysilicon whereby, in addition to the forming of said oxide coating on said polysilicon, a thin sleeve shaped region having impurities of said first conductivity type is formed in said narrow portion of said epitaxial layer residing between said first and second recessed oxide isolation regions.

4,338,139

METHOD OF FORMING SCHOTTKY-I²L DEVICES BY IMPLANTATION AND LASER BOMBARDMENT

Kazuyoshi Shinada, Yokohama, Japan, assignor to VLSI Technology Research Association, Japan

Filed Nov. 26, 1980, Ser. No. 210,749
Claims priority, application Japan, Nov. 29, 1979, 54-154600; Nov. 29, 1979, 54-154601
Int. Cl.³ H01L *21/263, 29/48, 21/285*
U.S. Cl. 148—1.5 **11 Claims**



1. A method for manufacturing a semiconductor device comprising:
the step of burying the first and second regions of a second conductivity type spaced from each other in a semiconductor body of a first conductivity type;
the step of locally disposing a first interconnection layer made of a metal on a surface region of said semiconductor body facing said first region;
the step of forming an insulating film on the surface of said first interconnection layer by subjecting said surface to anodic oxidation;
the step of ion-implanting an impurity of said second conductivity type into said semiconductor body except a portion thereof under said first interconnection layer at such an energy level that said impurity may reach said first and second regions;
the step of activating said ion-implanted layer by applying a laser beam thereto; and
the step of forming a second interconnection layer connected with said activated layer by covering the whole surface of said semiconductor body with a metal and patterning said metal.

4,338,140

COATING COMPOSITION AND METHOD

Gary A. Reghi, Sterling Hts., Mich., assignor to Hooker Chemicals & Plastics Corp., Warren, Mich.

Continuation-in-part of Ser. No. 879,648, Feb. 21, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,811
Int. Cl.³ C23F *7/00, 7/08*
U.S. Cl. 148—6.14 R **81 Claims**

1. An acidic aqueous chromium-free composition of pH value less than 5 containing in dissolved form hafnium, fluoride and a vegetable tannin in amounts, at least 1 ppm of each, sufficient, when contacted with a metal surface, to impart corrosion resistance to the metal surface.

32. An acidic aqueous chromium-free composition of pH value less than 5 containing in dissolved form phosphate ions in an amount of about 10 up to about 200 ppm and zirconium, fluroide and a vegetable tannin in amounts, at least 1 ppm of each, sufficient, when contacted with a metal surface, to impart corrosion resistance to the metal surface.

64. An acidic aqueous chromium-free composition of pH value of about 3 to about 4.5 containing in dissolved form zirconium, fluoride and a vegetable tannin amounts, at least 1 ppm of each, sufficient, when contacted with a metal surface, to impart corrosion resistance to the metal surface.

4,338,141

FORMATION OF ZINC PHOSPHATE COATING ON METALLIC SURFACE

Takashi Senzaki; Ryoichi Murakami, both c/o Nippon Paint K.K., 19-17 Ikeda Nakamachi, Neyagawa-shi, Osaka; Kiyotada Yasuhara, and Masashi Takahashi, both c/o Nippon Paint K.K., 1-15 Minami Shinagawa 4-chome, Shinagawa-ku, Tokyo, all of Japan

Filed May 1, 1980, Ser. No. 145,587
Claims priority, application Japan, May 2, 1979, 54-54399
Int. Cl.³ C23F *7/08*
U.S. Cl. 148—6.15 Z **37 Claims**

1. An acidic aqueous coating solution for forming a zinc phosphate coating on a metal surface consisting essentially of about 0.4 to about 1 g/l of zinc, about 5 to about 40 g/l of phosphate, about 0.01 to about 0.2 g/l of nitrite and about 2 to about 5 g/l of chlorate.

4,338,142

MELTING FLUX COMPOSITION FOR SUBMERGED ARC WELDING

Naoki Okuda, Kamakura, and Kazuo Tanaka, Yokosuka, both of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jan. 19, 1981, Ser. No. 226,090
Int. Cl.³ B23K *35/34*
U.S. Cl. 148—26 **5 Claims**

1. A melting flux composition for submerged arc welding comprising 6–15% by weight of MgO, 5–10% by weight of CaO, 10–20% by weight of CaF_2, 14–19% by weight of Al_2O_3,

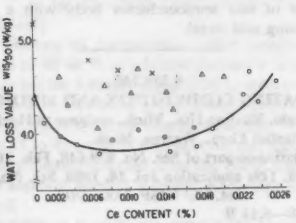
20–25% by weight of TiO_2, 15–20% by weight of SiO_2, and 5–10% by weight of MnO.

4,338,143

NON-ORIENTED SILICON STEEL SHEET WITH STABLE MAGNETIC PROPERTIES

Yoshiaki Shimoyama; Shigenobu Koga, and Katsuyki Ohba, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,419
Int. Cl.³ C04B *35/00*
U.S. Cl. 148—31.55 **3 Claims**



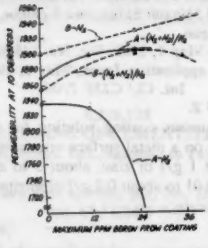
1. A non-oriented silicon steel sheet having uniform magnetic properties characterized by possessing a watt loss value of 4.10 or less at 15000 gauss/50 cycle, and magnetic flux density B50 of at least 1.65 W/m^2, said sheet consisting essentially of ≦0.015% % C, 1.5–3.5% Si, 0.05–1.0% Mn, 0.005–0.08% acid-soluble Al, ≦0.015% S, ≦0.010% O, ≦0.005% N, B in such amount that the ratio of B to N is in the range of 0.4–2.0, 0.001–0.020% of at least one rare earth element, and the remainder of Fe and unavoidable impurities.

4,338,144

METHOD OF PRODUCING SILICON-IRON SHEET MATERIAL WITH ANNEALING ATMOSPHERES OF NITROGEN AND HYDROGEN

Howard C. Fiedler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 133,322, Mar. 24, 1980, abandoned. This application Jan. 12, 1981, Ser. No. 223,963
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—113 **7 Claims**



1. The method of producing grain oriented silicon-iron sheet comprising the steps of:

(a) providing fine-grained, decarburized, and primary recrystallized silicon-iron intermediate product sheet material, said material containing from about 2.2% to about 4.5% silicon, boron, manganese up to about 0.10%, said material having a manganese-to-sulfur ratio of at least 2.1 and less than about 20 parts per million solute nitrogen;

(b) covering said sheet with an electrically insulating boron-containing adherent coating;

(c) heating said coated sheet in a first atmosphere comprising hydrogen and at least about 20 volume percent nitrogen to a first temperature developing thereby a cube-on-edge secondary recrystallization texture in said sheet; and

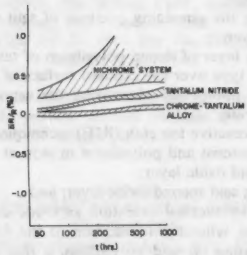
(d) increasing the temperature of said sheet to a second temperature and holding said sheet at said second temperature in a second atmosphere consisting essentially of hydrogen for a predetermined time effecting thereby substantial removal of carbon, sulfur and nitrogen.

4,338,145

CHROME-TANTALUM ALLOY THIN FILM RESISTOR AND METHOD OF PRODUCING THE SAME

Nobuo Yasujima, Kawagoe; Natsuo Itokawa, Fujioka, and Seiichiro Kobayashi, Yoshida, all of Japan, assignors to Taisei Kohki Co., Ltd., Saitama, Japan

Filed Dec. 15, 1980, Ser. No. 216,640
Claims priority, application Japan, Dec. 27, 1979, 54-172418
Int. Cl.³ H01C *1/012*; C22C *27/02, 27/06*
U.S. Cl. 148—133 **9 Claims**



2. A chrome-tantalum thin film resistor comprising a substrate and a chrome-tantalum alloy thin film consisting essentially of 10 to 95 atomic % of chrome and the balance being tantalum formed on said substrate preheated heated to a temperature selected to provide a temperature coefficient of resistance of the thin film near zero, but not higher than 900° C.

4,338,146

METHOD OF MANUFACTURING EMULSION EXPLOSIVE INSENSITIVE TO A #8 DETONATOR

Lars A. Granlund, Nora, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Filed Oct. 15, 1979, Ser. No. 84,557
Claims priority, application Sweden, Oct. 23, 1978, 7811002
Int. Cl.³ C06B *21/00*
U.S. Cl. 149—109.6 **8 Claims**

1. A method of manufacturing an emulsion explosive which is insensitive to a no. 8 detonator and which comprises a water solution of at least one oxidizing salt dispersed in a fuel, an emulsifier, an emulsion stabilizer and a gas acting as an aid to detonation, the improvement comprising forming the water solution of the salt, heating the solution to a temperature of 70° to 100° C., thereafter adding gaseous particles both as an aid to detonation and as a co-emulsifier, then adding fuel with emulsifier dissolved therein and then effecting emulsification at a relatively low stirring speed due to said co-emulsifier of gaseous particles.

4,338,147

METHOD AND APPARATUS FOR WINDING A WEB UPON A CORE HAVING A STRIPE OF HOT-MELT ADHESIVE

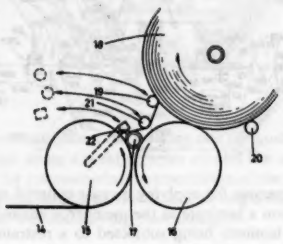
Per-Ole Bäckström, and Jorma Virolainen, both of Karhula, Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Division of Ser. No. 14,951, Feb. 26, 1979. This application Nov. 3, 1980, Ser. No. 203,528

Claims priority, application Finland, Jun. 21, 1978, 781977; Sep. 20, 1978, 782865

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—187 2 Claims



1. In the method of winding a web of material into a web roll upon a rotatably driven core having a hot-melt adhesive deposited upon an outer surface of the core, and wherein the web being wound is fed from a supply thereof and is secured to the core by said hot-melt adhesive, and there is maintained an infeed length of web extending from said supply to the tangential winding point of the web being currently wound, and a new core is positioned in tangential contact with said infeed length of web, the improvement which comprises the steps of supporting the new core on a pair of rotatably driven parallel rollers that drivingly engage the new core for winding the infed web thereupon; concurrently applying heat and a pressing force to and through the infed web at the zone of tangential contact thereof with the new core to heat the hot-melt adhesive on the new core and set such adhesive in its active state, and to press the infed web securing the infed web to the new core along said zone of tangential contact; and severing the infed web at a location between the tangential winding point of the web roll currently being wound and the zone of tangential contact with the new core to allow removal of the currently wound web roll and to allow rotatable driving of the new core for continual winding of the infed into a web roll upon the new core.

2. In an apparatus for winding a web of material onto a web roll upon a core having a hot-melt adhesive deposited upon an outer surface of the core, and including means to rotatably drive said core and web roll, and web feeding means operable to feed the web from a supply thereof, said web being secured to the core by the hot-melt adhesive, said web feeding means maintaining an infeed length of web extending from said supply to the tangential winding point of the web roll being currently wound, and including means operable to position a new core in tangential contact with said infed length of web, the improvement which comprises a pair of rotatably driven parallel rollers that support the new core and drivingly engage same for winding the infed web thereupon; means operable to concurrently apply heat and a pressing force to and through the infed web at the zone of tangential contact thereof with the new core to heat the hot-melt adhesive on the new core and set such adhesive in its active state, and to press the infed web against said hot-melt adhesive thereby securing the infed web to the new core along said zone of tangential contact; and means operable to sever the infed web at a location between the tangential winding point of the web roll currently being wound and the zone of tangential contact with the new core to allow removal of the currently wound web roll and the rotatable driving of the new core by said rollers for continued winding of the infed web into a web roll upon the new core.

4,338,148

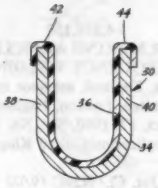
METHOD OF MANUFACTURING A DOOR EDGE GUARD

Robert Adell, Novi, Mich., assignor to U.S. Product Development Co., Novi, Mich.

Filed Oct. 7, 1980, Ser. No. 194,747

Int. Cl.³ B32B *3/04*

U.S. Cl. 156—222 11 Claims



1. A method for manufacturing a door edge guard of the type having a metal outer U-shaped channel element and a plastic U-shaped inner channel element within the outer channel, the method comprising the steps of:

(a) bonding the plastic material to form the inner channel element to at least a portion of the surface area of the metal element; and

(b) roll-forming the metal element into a U-shaped channel, the plastic material having the general shape of the inner surface of the U-shaped metal channel element, the bonding of at least a portion of the plastic material to the surface of the metal element occurring prior to completion of the roll-forming operation; including the step of applying plastic material to the inner and outer sides of the ends of the legs of the U-shaped metal channel element.

4,338,149

PROCESS FOR MAKING CIRCUIT BOARDS HAVING RIGID AND FLEXIBLE AREAS

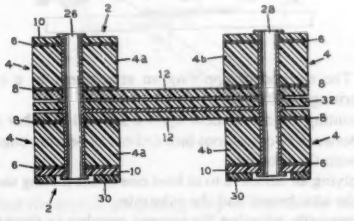
Wolfgang Quaschner, Geldern, Fed. Rep. of Germany, assignor to Kollmorgen Technologies Corporation

Filed Nov. 6, 1980, Ser. No. 204,660

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946726

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—248 12 Claims



1. A process for the production of laminated circuit boards having rigid and flexible areas the steps comprising, separating from the rigid layer to be laminated with covering layers to make up the circuit board a rigid board area corresponding to the circuit board area to be flexible, while maintaining the separated rigid board area coplanar and contiguous with the area of the rigid layer to be rigid in the completed circuit board, laminating covering layers to the opposite surfaces of the rigid layer but to only one of the surfaces of the separated

and coplanar rigid board area, severing said covering layer laminated to said one of the surfaces of said separated and coplanar rigid board area from the cover layer laminated to said rigid layer along the lines separating said rigid layer from said area to be flexible and removing from the laminated circuit board the separated rigid board area and the one covering layer laminated thereto, leaving in said laminated circuit board said rigid layer with the separated rigid board area removed therefrom and with the other covered layer laminated to the opposite side of said rigid layer and spanning the removed area forming therein a flexible board area.

4,338,150

METHOD FOR MAKING ARTICLES BY RADIO FREQUENCY WELDING

Brian Weeks, Epsom, England, assignor to The British Petroleum Company Limited, London, England

Filed Oct. 17, 1980, Ser. No. 197,789

Claims priority, application United Kingdom, Oct. 24, 1979, 7936835

Int. Cl.³ B29C *19/02*

U.S. Cl. 156—275.5 **11 Claims**

1. A method of joining together surfaces constituted by a blend comprising (1) unvulcanized chlorosulphonated polyethylene and/or chlorinated polyethylene, (2) a bituminous petroleum derivative of softening point in excess of 25% by weight, and (3) a long chain fatty acid amide as a non-interfering blocking agent, which comprises bringing the surfaces to be joined into contact and subjecting them to radio frequency dielectric welding.

4,338,151

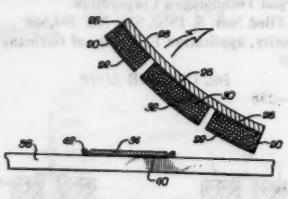
METHOD OF SECURING AN ADHESIVE ATTACHMENT ASSEMBLY TO A SUBSTRATE

Charles G. Hutter, III, Carson City, Nev., assignor to Physical Systems, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 74,932, Sep. 13, 1979, Pat. No. 4,302,492. This application Sep. 19, 1980, Ser. No. 188,963

Int. Cl.³ B32B *31/16, 7/06, 1/00*

U.S. Cl. 156—344 **21 Claims**



1. The method of applying an attachment to a substrate, comprising the steps of:

mounting the attachment upon a support member movable between two positions into and out of bearing engagement with the substrate;

applying an adhesive to at least one of the mating surfaces of the attachment and the substrate;

temporarily adhering the support member to the substrate;

moving the support member to move the attachment into bearing engagement with the substrate;

applying to the attachment a spring force reacting between the substrate and the side of the attachment opposite the substrate for urging the attachment toward the substrate; and

thereafter removing the support member from the substrate and the attachment while leaving the attachment in engagement with the substrate.

4,338,152

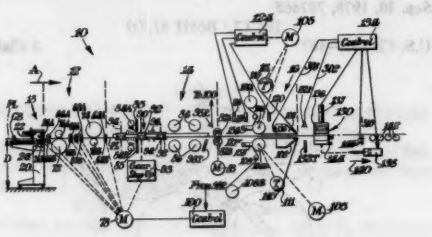
GRIPPING ARRANGEMENT FOR AN APPARATUS FOR AUTOMATICALLY LAMINATING CIRCUIT BOARDS

Matthew A. Del Bianco, Chesapeake Isle, North East, Md., and Henry J. Tancredi, Gwynedd, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1981, Ser. No. 235,414

Int. Cl.³ B31B *1/00*

U.S. Cl. 156—351 **2 Claims**



1. In an apparatus for applying a resist material to a planar member to form a laminate as the member is advanced therethrough, the laminate being subjected to a restraining force within the apparatus, a gripping arrangement for removing the laminate from the apparatus comprising:

a carriage movable under the influence of a predetermined displacement force from a first to a second position;

a first actuator for applying a predetermined displacement force on the carriage;

a gripping element mounted to the carriage, the gripping element being movable from an open to a grasping position;

a second actuator for moving the gripping element from the open to the grasping position;

a detector for generating a signal representative of the emergence of the laminate from the apparatus; and,

means responsive to the signal for simultaneously energizing the actuators to move the gripping element to the grasping position and initiating the application of the displacement force to the carriage, the magnitude of the displacement force being such that it is dominated by the restraining force until the laminate is advanced completely through the apparatus, the displacement force thereupon becoming dominant to apply a jerking force to free the laminate from the resist material and displace the carriage to the second position.

4,338,153

WELDING PLASTIC TUBE LINING

Heinz A. R. Zimmerman, Bochum-Stiepel, Fed. Rep. of Germany, assignor to Ameron, Inc., Monterey Park, Calif.

PCT No. PCT/US80/00767, § 371 Date Feb. 23, 1981, § 102(e) Date Feb. 23, 1981, PCT Pub. No. WO81/00006, PCT Pub. Date Jan. 8, 1981

PCT Filed Jun. 20, 1980, Ser. No. 243,944

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925417; May 14, 1980, 3018379

Int. Cl.³ B65H *8/00*

U.S. Cl. 156—391 **46 Claims**

1. Apparatus for welding plastic lining of tubing comprising:

a carriage movable along the length of such tubing inside such tubing;

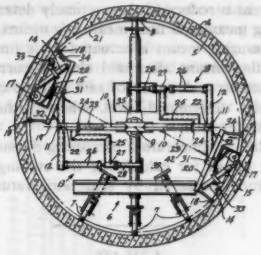
means for fixing position of the carriage at a selected location in the tubing;

at least one carrier arm mounted on the carriage for rotation about an axis coinciding with the axis of such tubing;

a welding unit for welding plastic tubing lining mounted on an outer end of such a carrier arm remote from the axis of rotation;

drive means for propelling the welding unit and carrier arm around the interior of such tubing;

means for resiliently biasing the welding unit outwardly towards the wall of the tubing;



guide means adjacent the welding unit for guiding the welding unit along a welding seam around the tubing; and

means for accommodating translation of the welding unit along the length of the tubing in response to the guide means without moving the carriage.

4,338,154

MACHINE FOR PRODUCING SINGLE-FACE CORRUGATED BOARD

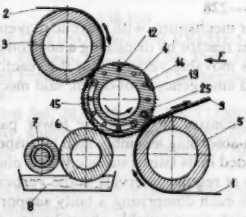
Daniel Berthelot, Montluel, and Gerard Badin, Bourgoin-Jallieu, both of France, assignors to S. A. Martin, Villeurbanne, France

Filed Sep. 10, 1980, Ser. No. 186,006

Claims priority, application France, Sep. 14, 1979, 79 22960; Jun. 18, 1980, 80 13545

Int. Cl.³ B29D *7/14*; B31F *1/00*

U.S. Cl. 156—462 **12 Claims**



1. Single-face corrugator for forming corrugated paper, comprising

(a) an upper corrugated cylinder (3);

(b) a lower corrugated cylinder (4) adapted to mesh with said upper corrugated cylinder;

(c) said lower corrugated cylinder having a hollow inner space (11) for receiving saturated heating vapor;

(d) means for applying suction for holding said paper against said lower corrugated cylinder, said suction means comprising orifices (13) opening into larger cavities (14) provided in the exterior of said lower corrugated cylinder (4).

4,338,155

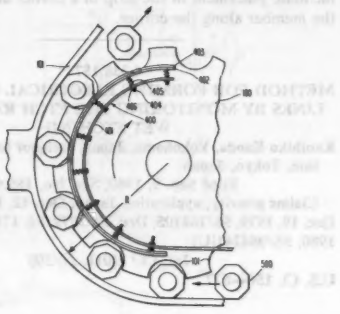
METHOD AND APPARATUS FOR INDEXING CONTAINERS TO BE LABELED

Byron D. Buchele, Muscatine, Iowa, assignor to H. J. Heinz Company, Pittsburgh, Pa.

Filed May 21, 1980, Ser. No. 151,800

Int. Cl.³ B65C *9/02*, *9/06*

U.S. Cl. 156—539 **3 Claims**



1. An indexing device for use with a labeler employing a star-wheel feed mechanism, said feed mechanism comprising a star-wheel and a concentric arc-shaped retainer of radius "R," the improvement comprising an arc-shaped guideway of a radius less than "R" concentric with said retainer adapted to apply an outward pressure against containers passing through said feed mechanism, said pressure being sufficient to force said containers into contact with the inner-face of said retainer thereby causing multi-faced containers to maintain one face in sliding contact with said retainer, said container exiting the feed mechanism properly positioned for the application of labels.

4,338,156

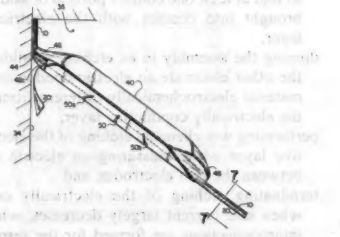
GLAZING STRIP APPLICATOR TOOL

Robert H. Sand, 20 Trailsend Dr., Canton, Conn. 06019, and Martin Trachtenburg, 14 Candlewood La., Avon, Conn. 06001

Filed Apr. 16, 1981, Ser. No. 254,862

Int. Cl.³ B32B *31/04*; E04F *21/00*

U.S. Cl. 156—574 **7 Claims**



6. A tool for applying a glazing strip to a corner or the like, said strip being of the type which includes a hollow thermoplastic carrier filled with glazing compound which compound can be extruded through a longitudinal slot in the carrier after peeling off a protective layer of paper and after the strip itself has been provided as a fillet in such a corner, said tool comprising an elongated member having an elongated cavity for slidably receiving the filled thermoplastic strip with the protective paper still applied to one face of the strip, said cavity being open to a front side of said member to expose a major portion of the paper layer covering the one face of the strip, said

member including opposed lips extending along a major portion of the marginal edges of the cavity's open side, said elongated member having a projecting portion at one end, said projecting portion defining a longitudinally extending and arcuately contoured continuation of the inner wall of said cavity to guide the strip as the member is moved relative to the strip, and said projecting portion having a tapered width which narrows toward the tip of said projecting portion to facilitate placement of the strip in a corner and movement of the member along the corner.

4,338,157

METHOD FOR FORMING ELECTRICAL CONNECTING LINES BY MONITORING THE ETCH RATE DURING WET ETCHING

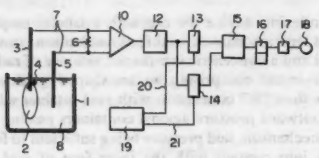
Kunihiko Kanda, Yokohama, Japan, assignor to Sigma Corporation, Tokyo, Japan

Filed Sep. 9, 1980, Ser. No. 185,439

Claims priority, application Japan, Oct. 12, 1979, 54/130749; Dec. 19, 1979, 54/164105; Dec. 19, 1979, 54/174803[U]; Jun. 18, 1980, 55/084241[U]

Int. Cl.³ H01L *21/306*

U.S. Cl. 156—627 **10 Claims**



1. A method of forming electrical interconnections, which comprises:

forming a number of semiconductor circuit elements on one semiconductor substrate,

depositing an electrically conductive layer on substantially the entire surface of the semiconductor substrate,

coating a photoresist on the electrically conductive layer, exposing the assembly to actinic rays, effecting development treatment so that an electrical interconnecting pattern is formed on the electrically conductive layer,

placing one electrode composed of the electrochemically same material as that of the electrically conductive layer so that at least one contact portion of said one electrode is brought into contact with the electrically conductive layer,

dipping the assembly in an etching solution while using as the other electrode an electric conductor composed of a material electrochemically different from the material of the electrically conductive layer,

performing wet chemical etching of the electrically conductive layer while measuring an electric current flowing between the two electrodes, and

terminating etching of the electrically conductive layer when said current largely decreases, whereby electrical interconnections are formed for the respective semiconductor circuit elements on the semiconductor substrate.

5. An apparatus for forming electrical interconnections on a semiconductor substrate on which a number of semiconductor circuit elements are formed, comprising:

a vessel containing therein an etching solution for etching an electrically conductive layer formed on substantially the entire surface of said semiconductor substrate,

a first electrode being composed of material which is electrochemically the same as that of said electrically conductive layer, which is brought into contact with a part of said electrically conductive layer,

a second electrode being composed of a material electrochemically different from the material of said electrically conductive layer, which is dipped in said etching solution,

means for measuring an electric current flowing between said two electrodes,

electric current detecting means for detecting that said electric current is reduced below a timely determined level,

time setting means and time measuring means, wherein said time measuring means is actuated for a time set by said time setting means after said electric current detecting means detects a decrease of said electric current below said timely determined level, whereby the progress of etching is detected,

etching solution temperature measuring means, and

computing means for calculating the etching rate from a temperature measured by said temperature measuring means.

4,338,158

PULPING IN THE PRESENCE OF A PROTECTOR

Jozef M. Bentvelzen, Sumner, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 764,097, Jan. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 645,972, Jan. 2, 1976, abandoned. This application Jun. 17, 1981, Ser. No. 274,591

Int. Cl.³ D21C *3/00, 9/10*

U.S. Cl. 162—37 **4 Claims**

1. A wood pulping and bleaching process comprising

a pulping stage, in which wood chips are changed to wood pulp fibers and coloring matter associated with said fibers is partially removed, using wood pulping chemicals other than magnesium-based chemicals and other than oxygen, and

a bleaching stage, in which said wood pulp fibers are caused to reflect with light more truly, using oxygen as a bleaching chemical,

the improvement comprising

adding a protector chemical in the amount of 0.01 to 2% based on the oven dry weight of the wood to said pulping stage only.

4,338,159

FINGER MECHANISM, WITH A CYCLIC MOVEMENT, FOR CONTROLLING A NUCLEAR REACTOR

Jean Martin, Chatillon, and Jacques Jolly, Igny, both of France, assignors to Framatome, Courbevoie, France

Filed Jun. 17, 1980, Ser. No. 160,424

Claims priority, application France, Jun. 18, 1979, 79 15572

Int. Cl.³ G21C *7/00*

U.S. Cl. 376—228 **4 Claims**

1. A finger mechanism, with a cyclic movement, for controlling a nuclear reactor by displacing a neutron-absorbing assembly which is movable vertically in the reactor for power adjustment and emergency shut-down, said mechanism comprising:

a vertical control bar from the lower part of which the neutron-absorbing assembly is to be suspended and which is provided in its lateral surface with a plurality of circular notches at regular intervals in the vertical direction;

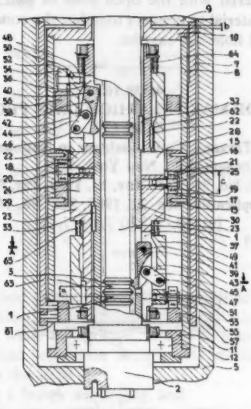
two hooks each comprising a body supporting a set of fingers which are pivotable about horizontal axes between disengaged positions and engaged positions in which said fingers are engaged in a selected one of said plurality of notches in said vertical control bar;

lifting and lowering means for the vertical displacement of said control bar and of the absorbing assembly when suspended therefrom, said lifting and lowering means comprising a first cam rotatable about the vertical axis of said control bar for simultaneously controlling vertical displacement of said two hook bodies for moving one of said hook bodies in an upwardly direction and the other of said hook bodies in a downwardly direction, the displacement of said hook bodies having an amplitude equal to n/2

times the distance between adjacent notches in said control bar, n being an integer;

means for causing rotation of said first cam;

means for causing said pivotable fingers to move between said engaged and said disengaged positions comprising second cams which are rotatable about said vertical axis of said control bar by said means for causing said rotation of said first cam, and members in engagement with said second cams for controlling said pivotable fingers to cause said fingers of one of said sets to move to their disengaged position and to cause said fingers of the other of said sets to move to their engaged position in a notch in said control bar at the moment when said hook bodies end their



vertical displacements in one direction and the other, with inversion of said directions of said two hooks, so that in use said control bar and the absorbing assembly when suspended therefrom are displaced in a continuous movement by said hooks during rotation of said first and second cams; and

a supporting and holding device for maintaining said second cams in operating position for operating said sets of fingers, said supporting and holding device being instantly releasable for bringing said second cams to an inoperative position in which all said fingers are in their disengaged positions so that said control rod can drop the absorbing assembly suspended therefrom into a position of maximum engagement in the nuclear reactor core.

4,338,160

PROCESS FOR DRYING AND/OR PREHEATING COAL

Serge Delessard, Forbach, and Roger M. Puff, Freyming-Merlebach, both of France, assignors to Charbonnages de France, Paris, France

Filed Jul. 28, 1980, Ser. No. 173,893

Claims priority, application France, Jul. 30, 1979, 79 19531

Int. Cl.³ C10B *39/02, 45/00, 57/10*

U.S. Cl. 201—1 **4 Claims**

1. In a process for at least one of drying and pre-heating coal to be coked, comprising the steps of:

(a) introducing said coal into a treatment chamber at a predetermined rate;

(b) introducing a heat-conveying gas selected from the group consisting of neutral and reducing heat-conveying gases into the treatment chamber;

(c) entraining and/or fluidizing the coal in said chamber by means of said gas so introduced;

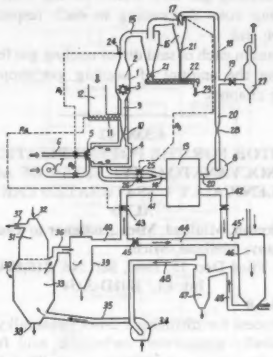
(d) entraining said dried or preheated coal by said gas and separating coal from gases;

(e) recycling at least a part of said heat-conveying gas into the treatment chamber;

(f) collecting said part of recycled gas and introducing that gas so collected into a heat exchanger;

(g) introducing hot dry-quenching fumes produced by dry quenching of hot discharged coke into the said heat exchanger; and

(h) transferring heat in the heat exchanger from the hot dry-quenching fumes to the heat-conveying gas, the improvement consisting of:



(1) utilizing as said heat-conveying gas a gas consisting essentially of water vapor maintained at a temperature of about 250° to about 650° C., and

(2) recycling to the treatment chamber at least a portion of said heat conveying gas consisting essentially of water vapor.

4,338,161

DEVICE FOR DRY COOLING GLOWING COKE

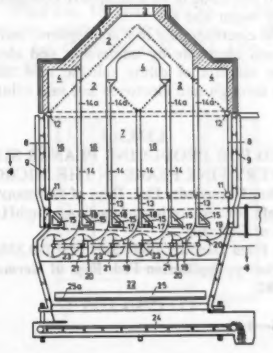
Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen, and Horst Dungs, Herne, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,157

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013722

Int. Cl.³ C10B *39/02, 45/00*

U.S. Cl. 202—228 **10 Claims**



1. An apparatus for dry cooling coke, comprising:

means defining a cooling chamber having a hot coke inlet;

a plurality of cooling walls for conveying a cooling medium extending across said cooling chamber, dividing said cooling chamber into a plurality of parallel vertically extending cooling channels having a top inlet for hot coke from said hot coke inlet and a bottom outlet;

a coke discharge mechanism at the bottom of each cooling channel for the controlled discharge of coke from each cooling channel;

means below each coke discharge mechanism defining an after chamber for receiving coke from said cooling channels;

direct cooling gas feed means in each cooling channel above said coke discharge mechanism for supplying cooling gas to directly cool coke in each of said cooling channels, said direct cooling gas feed means having a sloping top for deflecting coke descending in each respective cooling channel; and

valve means in each of said direct cooling gas feed means for directing the amount of cooling gas supplied to each cooling channel.

4,338,162

INHIBITOR FOR THE POLYMERIZATION OF A 2-ISOCYANATOALKYL ESTER OF AN α, β-ETHYLENICALLY UNSATURATED CARBOXYLIC ACID

Mark R. Johnson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1980, Ser. No. 216,694
Int. Cl.³ B01D *3/34*
U.S. Cl. 203—8 **7 Claims**

1. In a process for distilling a 2-isocyanatoalkyl ester of an α,β-ethylenically unsaturated carboxylic acid from a liquid mixture, the improvement comprising distilling the isocyanatoalkyl ester in the presence of an amount of gaseous nitrogen oxide effective to inhibit the vinyl polymerization of the isocyanatoalkyl ester.

4,338,163

CURING OF TETRABASIC LEAD PASTED BATTERY ELECTRODES

John F. Rittenhouse, Lafayette Hill, Pa., assignor to Eltra Corporation, Toledo, Ohio

Filed Dec. 3, 1980, Ser. No. 212,480
Int. Cl.³ H01M *10/12, 10/44*
U.S. Cl. 204—2.1 **12 Claims**

1. A process of fabricating an electrode for a battery, comprising:

mixing tetrabasic lead sulfate with water and an effective amount of ammonium carbonate to form a paste;

coating said electrode with said paste;

curing said electrode in an atmosphere consisting essentially of water vapor and air;

drying said electrode in a dry atmosphere; and

forming said electrode by immersing said electrode in an aqueous solution of dilute sulfuric acid and passing a current through said electrode and said solution.

4,338,164

METHOD FOR PRODUCING PLANAR SURFACES HAVING VERY FINE PEAKS IN THE MICRON RANGE

Reimar Spohr, Darmstadt, Fed. Rep. of Germany, assignor to Gesellschaft für Schwerionenforschung GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,350
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951287
Int. Cl.³ C25D *1/20, 5/54*
U.S. Cl. 204—4 **12 Claims**

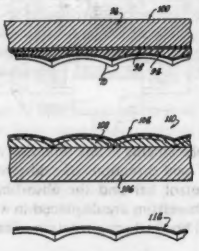
1. Method for producing a planar surface of conductive material having very fine peaks in at most the micron range of conductive material conductively connected thereto, comprising the steps of: irradiating a sheet of planar dielectric material, which is to serve as a matrix, with a beam of parallel high energy heavy ions to form a plurality of nuclear traces of the same length in the dielectric material with the density and parallel orientation of the irradiation, and thus of said nuclear traces, corresponding to the desired density and orientation of peaks on the planar surface; subsequently etching said sheet of dielectric material to expose said nuclear traces and form hole-like cavities with diameters in the micron range; and filling said hole-like cavities with conducting material and covering one of the major surfaces of said sheet of planar dielectric material with the open ends of said cavities with conductive material to connect together the conductive material filling said hole-like cavities.

4,338,165

METHOD OF MAKING A HIGH-GAIN PROJECTION SCREEN

Petro Vlahos, Tarzana, Calif., assignor to National Association of Theatre Owners, Inc., New York, N.Y.

Division of Ser. No. 960,465, Nov. 13, 1978, Pat. No. 4,235,513.
This application Sep. 22, 1980, Ser. No. 189,107
Int. Cl.³ C25D *1/06, 1/20*
U.S. Cl. 204—7 **7 Claims**



1. Method of producing a unitary lenticule assembly for a projection screen and the like, comprising

producing a rigid body at least partially bounded by an optically smooth convex surface of revolution with respect to a generator axis,

forming a plurality of shell sections each having a concave surface which is a negative replica of a section of a common selected zone of the body surface,

mounting said shell sections in like orientation in closely packed arrangement substantially in a common plane with the concave shell surfaces facing generally perpendicular to the plane,

and replicating the concave surfaces of the mounted shells to form a unitary lenticule assembly.

4,338,166

ELECTROCHEMICAL SYNTHESIS OF ORGANOPHOSPHORUS COMPOUNDS

Mark A. Kuck, Upper Montclair, N.J., and Gary K. Miller, Port Chester, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

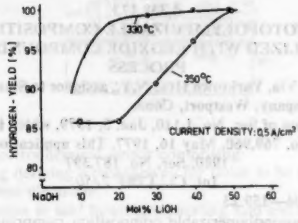
Filed Dec. 8, 1980, Ser. No. 213,774
Int. Cl.³ C01B *25/00*; C25B *3/00*
U.S. Cl. 204—59 R **10 Claims**

1. A process for the preparation and separation of organophosphorus derivatives of organic hydroxyl or sulfhydryl compounds which includes the step of electrolyzing in a substantially anhydrous medium said organic hydroxyl or sulfhydryl compounds in an electrochemical cell having an anode comprising ferrophosphorus.

4,338,167
METHOD FOR INCREASING ELECTROLYTIC EFFICIENCY OF A FUSION ELECTROLYSIS WITH ANODIC OXYGEN GENERATION

Jiri Divisek; Jürgen Mergel, and Frans G. Bodewig, all of Julich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 107,591, Dec. 27, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,319
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856276
Int. Cl.³ C25B *1/04, 1/10*
U.S. Cl. 204—60 **9 Claims**



1. A method of increasing the electrolytic efficiency of a melt fusion electrolysis in hydroxide containing melt including particularly water electrolysis, with which an anodic oxygen generation and separation occurs, said method including in combination the steps of:

providing a fusion electrolyte; and

adding of additional lithium ions to said fusion electrolyte for improved hydrogen yield of an alkaline fusion electrolysis through addition of the lithium ions which in themselves lead to an increase of cell voltage with equal or constant current density initially considered disadvantageous though contributing to gaining or concentration of oxygen and hydrogen as an energy carrier under greatest possible economical conditions.

4,338,168
HYDROMETALLURGICAL TREATMENT OF COPPER-BEARING HEMATITE RESIDUE

Robert W. Stanley, Kirkland; Serge Monette, Longueuil, and Derek G. E. Kerfoot, St. Albert, all of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed Feb. 11, 1981, Ser. No. 233,516
Claims priority, application Canada, Jun. 10, 1980, 353676
Int. Cl.³ C25C *1/12*
U.S. Cl. 204—108 **4 Claims**

1. A hydrometallurgical method of recovering copper values from copper concentrates which comprises:

(a) forming an aqueous leach solution containing chloride or bromide ions in a predetermined concentration;

(b) dispersing copper concentrates in said leach solution to form a slurry;

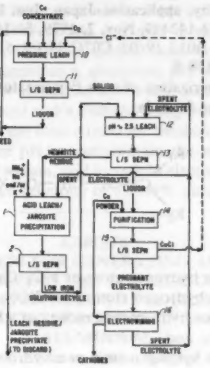
(c) carrying out the leaching operation of said slurry at an elevated temperature and under an overpressure of oxygen as well as with the concentration of the chloride or bromide ions such as to transform a major portion of the copper values present in the concentrates into a solid basic copper sulphate;

(d) separating resulting leach residue containing such basic copper sulphate from the leach solution;

(e) dissolving said residue containing basic copper sulphate in a mild sulphuric acid leach to form a high-copper, low-iron solution;

(f) separating said high-copper, low-iron solution from remaining hematite residue and purifying it to remove chloride or bromide ions and minor element impurities and then subjecting said purified solution to electrowinning for recovery of copper;

(g) leaching the remaining hematite residue in an aqueous sulphuric acid solution and in the presence of ammonium, sodium and/or potassium ions to simultaneously solubilize copper values still remaining in the hematite residue,



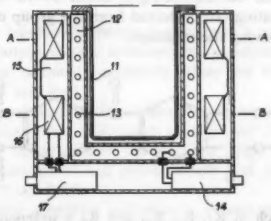
while converting a major portion of the hematite to ammonium, sodium and/or potassium jarosite thereby producing a low iron, copper-bearing solution containing less than 5 gpl dissolved iron therein; and

(h) separating the resulting low-iron, copper-bearing solution from the jarosite containing residue and recycling it to the mild sulphuric acid leach step (e).

4,338,169
PROCESS FOR PROMOTING PHYSICAL AND/OR CHEMICAL REACTIONS PERFORMED IN A FLUID MEDIUM

Gerard Bienvenu, Annemasse, France, assignor to Extramet, Annemasse, France

Filed Jan. 16, 1980, Ser. No. 112,596
Claims priority, application France, Jan. 17, 1979, 79 01061
Int. Cl.³ C25C *1/12, 1/16, 1/06*
U.S. Cl. 204—155 **18 Claims**



1. A process for promoting physical and/or chemical reactions performed in a fluid medium, comprising moving a magnetic solid material freely dispersed in said fluid medium and formed, at least at the surface, of a substance playing a physical and/or chemical role in said reaction, by subjecting said material to the effect of a variable magnetic field comprising providing the magnetic field with sufficient intensity to impart to the particles of said material momentary speeds of movement relative to the fluid, and varying it, in intensity, position and/or direction, so as to maintain the particles in suspension in the fluid.

4,338,170

ISOMERIZATION OF β-γ-UNSATURATED ALCOHOL OR ITS ESTER

Atsuo Murata; Syuji Tsuchiya, and Hideo Suzuki, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

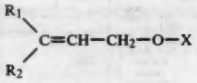
Filed May 23, 1980, Ser. No. 152,819

Claims priority, application Japan, Jun. 14, 1979, 54-74936; Nov. 2, 1979, 54-142419; Nov. 2, 1979, 54-142421

Int. Cl.³ B01J 19/08; C07C 35/00, 67/333, 69/76

U.S. Cl. 204—158 R 5 Claims

3. In an isomerization of a cis β-γ-unsaturated alcohol or its ester having the formula;



wherein

R_1 represents hydrogen atom or a C_1–C_5 alkyl group;

X represents hydrogen atom or —C(O)—R_3;

R_2 represents a hydrocarbon moiety or a hydroxy hydrocarbon moiety; and

R_3 represents hydrogen atom or a hydrocarbon moiety, into a trans-form, the improvement characterized by isomerizing said cis β-γ-unsaturated alcohol or ester in the presence of a mercaptan or disulfide which is a member selected from the group consisting of aromatic mercaptans, alkyl dithiols, dialkyl disulfides, thioglycol, mercaptoethanol, octylthiol, cyclohexanethiol, cyclopentanethiol, and mixtures thereof as a catalyst; wherein said isomerization is carried out under irradiation.

4,338,171

PHOTOPOLYMERIZABLE COMPOSITIONS

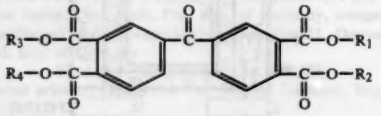
Walter P. Barie, Jr., Glenshaw, Pa.; Thomas F. Huemmer, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 16, 1980, Ser. No. 159,755

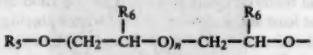
Int. Cl.³ C08F 2/50

U.S. Cl. 204—159.15 8 Claims

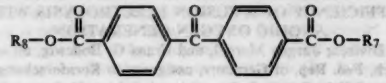
1. A photopolymerizable composition consisting essentially of about 50–90 weight % of a polymerizable unsaturated compound and, correspondingly, about 50–10 weight % of a photoinitiating ester selected from the group consisting of (a) an ester having the structure:



where each of R_1, R_2, R_3, and R_4 is independently selected from the group consisting of a hydrogen atom and an alkoxy ether moiety having the structure:



where R_5 is an alkyl group containing up to about 18 carbon atoms, R_6 is hydrogen or a methyl group, and n is zero or a small integer, with the further provision that not more than 1 of R_1 and R_2 and not more than 1 of R_3 and R_4 is hydrogen, and (b) an ester having the structure:



where each of R_7 and R_8 is an alkoxyl ether moiety of the structure described above.

4,338,172

PHOTOPOLYMERIZABLE COMPOSITION STABILIZED WITH EPOXIDE COMPOUNDS AND PROCESS

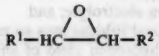
Francis A. Via, Yorktown Hts., N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 1,110, Jan. 5, 1979, which is a division of Ser. No. 769,960, May 16, 1977. This application Sep. 15, 1980, Ser. No. 187,397

Int. Cl.³ C08F 2/50

U.S. Cl. 204—159.23 7 Claims

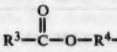
1. A photopolymerizable composition comprising at least one photopolymerizable ethylenically unsaturated compound containing a benzoin ether in an amount sufficient to initiate photopolymerization and a stabilizing amount of an epoxide having the formula:



wherein:

R^1 and R^2 are

(a) independently selected hydrogen, alkyl of 1 to 18 carbon atoms, aryl of 6 to 13 ring carbon atoms,



where R^3 is alkenyl of 2 to 6 carbon atoms and R^4 is alkylene of 1 to 4 carbon atoms or cycloalkenyl oxide of 5 or 6 ring carbon atoms, with the proviso that both R^1 and R^2 cannot be hydrogen; or

(b) together with the adjacent epoxy carbon atoms form a cyclic hydrocarbon having a total of 5 to 7 ring carbon atoms.

4,338,173

CATALYTIC ISOMERIZATION PROCESS USING PHOTO-INDUCED DELIGANDATION

James T. Yardley, Morristown; Alan M. Rosan, Madison, and Eva L. Menger-Hammond, Madison, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 23, 1980, Ser. No. 161,998

Int. Cl.³ C07C 5/23

U.S. Cl. 204—162 R 19 Claims

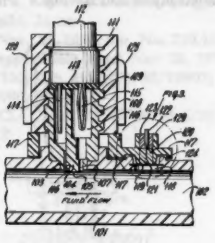
1. A process for inducing a catalytic isomerization reaction in a reactant gas comprising an unsaturated hydrocarbon, which comprises exposing the gas to optical radiation in the presence of a gaseous compound comprising a transition metal and a ligand.

4,338,174

ELECTROCHEMICAL SENSOR WITH TEMPERATURE COMPENSATION MEANS

Paul S. Tamura, Irvine, Calif., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Jan. 8, 1979, Ser. No. 1,507
Int. Cl.[3] G01N 27/30
U.S. Cl. 204—195 P 5 Claims



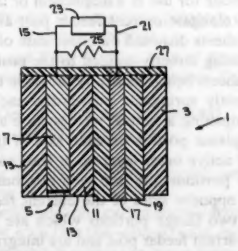
1. An electrochemical sensor comprising:
a housing defining a passageway for fluids to be monitored;
at least one electrode;
a membrane in said housing separating said electrode from fluid in said passageway;
and characterized by temperature sensing means, proximate said membrane, penetrating said housing and being in direct thermal contact with fluid in said passageway,
wherein said temperature sensing means comprises a removable collar carrying thermistor means, said collar being sealably matably received by said housing means to hold said thermistor means in direct thermal contact with said fluid, whereby said sensor is disposable but said temperature sensing means is reusable,
wherein said electrode includes a disposable portion carried by said housing and a reusable portion contactable with said disposable portion, wherein said housing includes an outwardly raised boss surrounding said disposable electrode portion, wherein said reusable electrode portion includes a collar for matable sealing engagement with said boss, and wherein said thermistor means collar includes a protuberance removably held between said boss and said electrode collar.

4,338,175

ALL SOLID STATE ELECTRODE SYSTEM

Ira Binder, New Rochelle, and Horace A. Teass, Jr., Armonk, both of N.Y., assignors to McNab, Incorporated, Mount Vernon, N.Y.

Continuation-in-part of Ser. No. 22,472, Mar. 21, 1979, abandoned. This application May 12, 1980, Ser. No. 149,119
Int. Cl.[3] G01N 27/30
U.S. Cl. 204—195 R 2 Claims



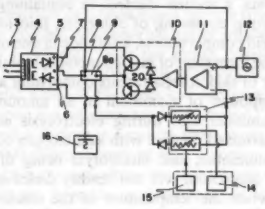
1. An all solid state electrode system for the measurement of the pH of a fluid stream including a cell body having a metalloid electrode composed of ultra-pure antimony combined with an insulated from an electrode of a noble metal of the platinum group of metals, said noble metal electrode being a reference electrode which is inert to chemical attack by the fluid stream of which the pH is being measured, said noble metal electrode having a body portion formed of a conducting material and a noble metal on and covering an end thereof and in contact with said body portion, the noble metal covered end of said noble metal electrode and said metalloid electrode being immersed in the fluid stream, leads connecting each electrode to low impedance electronic pH instrumentation, and an input resistor connected across said leads, the electrical path being completed and a voltage being produced proportional to the pH in the fluid stream for displaying on the electric low impedance pH instrumentation the measurement of the pH in the field stream, said metalloid electrode being composed of electronics antimony of 99.999% purity.

4,338,176

SYSTEM FOR GENERATING AND AUTOCONTROLLING THE VOLTAGE OR CURRENT WAVE FORM APPLICABLE TO PROCESSES FOR THE ELECTROLYTIC COLORING OF ANODIZED ALUMINIUM

Jose' Garcia Pelaez, Alicante, Spain, assignor to Empresa Nacional del Aluminio, S.A.- (ENDASA), Madrid, Spain

Filed Oct. 11, 1979, Ser. No. 83,943
Claims priority, application Spain, Oct. 31, 1978, 474.736
Int. Cl.[3] C25D 11/22; G05F 1/44
U.S. Cl. 204—228 7 Claims



1. A system for generating and controlling one of either the voltage and current waveform applied to a load having first and second terminals and applicable to a process for the electrolytic colouring of anodized aluminium, said system comprising:
a symmetric bipolar DC power supply having positive and negative output voltage terminals and a neutral terminal, said neutral terminal operatively connected to said first terminal of said load;
a power control stage having at least two transistors operating in a linear mode, said power control stage operatively connected between said positive and negative output voltage terminals of said power supply and said second terminal of said load;
an operational amplifier operatively connected to said power control stage for controlling said power control stage, said operational amplifier having a non-inverting input operatively connected to said neutral terminal of said power supply and having an inverting input operatively connected to said second terminal of said load;
a negative feed-back means operatively connected between said inverting terminal of said operational amplifier and said second terminal of said load, said feed-back means comprising two unipolar electrical resistance paths connected in parallel, said electrical resistance paths separately controllable by a programming system;
a signal generator operatively connected to said non-invert-

ing input of said operational amplifier for providing a periodic signal of predetermined characteristics;

wherein said programming system controls said resistance paths of said feed-back means to control one of either the voltage or current waveform applied to said load.

4,338,177

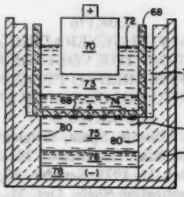
ELECTROLYTIC CELL FOR THE PRODUCTION OF ALUMINUM

James C. Withers, Strongsville, and Gary V. Upperman, North Olmsted, both of Ohio, assignors to Metallurgical, Inc., Lakewood, Ohio

Continuation-in-part of Ser. No. 944,987, Sep. 22, 1978, abandoned, and Ser. No. 52,578, Jun. 27, 1979, abandoned. This application Jul. 30, 1979, Ser. No. 62,135

Int. Cl.³ C25C *3/06, 3/12, 3/24, 7/02*

U.S. Cl. 204—243 R 22 Claims



1. An electrolytic cell for the production of aluminum comprising in combination, a housing having first and second compartments, a molten electrolyte containing ions selected from the group consisting of chlorides, fluorides or mixtures thereof in said compartments, a cathode in one of said compartments for the formation of molten metallic aluminum, an anode in the other of said compartments comprising an oxygen containing compound of aluminum in an amount sufficient to provide aluminum ions during electrolysis and a reducing agent in intermixed contact with said oxygen containing compound of aluminum, said electrolyte being of a material in which said compound will not readily dissolve in substantial quantities when the temperature of the electrolyte is in the range of 650° to 900° C., a porous membrane separating said first and second compartments, said membrane being of a material having a connected pore size sufficiently small to screen out said intermixture of said compound of aluminum and said reducing agent and sufficiently large to pass said aluminum ions, and a layer of impure aluminum forming a bipolar electrode disposed within said other compartment positioned between said anode and said cathode and supported by said membrane.

4,338,178

APPARATUS FOR ELECTROCHEMICAL PURIFICATION OF CONTAMINATED LIQUIDS

Vyacheslav T. Efimov, ulitsa Sumskaya, 59, kv. 2, Kharkov; Miron M. Nazarian, ulitsa Bijukhera, 13, kv. 138, Kharkov; Alexandr A. Axenko, ulitsa Bairona, 152, kv. 25, Kharkov; Vladimir A. Kolyada, ulitsa Petrozavodskaya, 91a, kv. 30, Kharkov; Anatoly X. Maskaev, ulitsa Studencheskaya, 12/14, kv. 25, Kiev; Ljudmila F. Shamsha, ulitsa Dinamovskaya, 3, kv. 23, Kharkov, and Vladimir I. Kostjuk, ulitsa Uritskogo, 23, kv. 51, Kiev, all of U.S.S.R.

Filed Jan. 12, 1981, Ser. No. 223,993

Int. Cl.³ C25B *9/00, 15/08;* C02F *1/46*

U.S. Cl. 204—275 4 Claims

1. An apparatus for electrochemical purification of contaminated liquids, comprising:

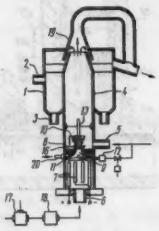
a settling chamber having an outlet pipe to discharge purified liquid;

an electrocoagulation chamber having a system of soluble electrodes, disposed in the bottom part of said electrocoagulation chamber;

an inlet pipe to feed electrolyte, disposed below said system of soluble electrodes;

an inlet pipe to feed contaminated liquid, disposed above said system of soluble electrodes;

a separating partition with an aperture, interposed between said system of soluble electrodes and said inlet pipe to feed contaminated liquid and having



a check valve installed in said aperture in said partition;

an injector to deliver a fluid under said check valve, installed so as to enable said check valve to move vertically under the action of the flow of the fluid delivered by the injector and of the flow of a gas-liquid mixture, ascending from the system of soluble electrodes of said electrocoagulation chamber.

4,338,179

ELECTRODE

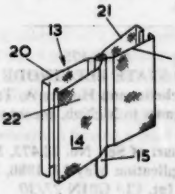
Ronald Dickson, Bridgnorth, and Michael R. Hampson, Brewood, both of England, assignors to Marston Excelsior Limited, Wolverhampton, England

Filed Jun. 20, 1977, Ser. No. 808,430

Claims priority, application United Kingdom, Jun. 21, 1976, 25637/76

Int. Cl.³ C25B *11/03, 11/10*

U.S. Cl. 204—284 7 Claims



1. An anode for use in a diaphragm or membrane cell comprising an elongate current feeder post and a pair of spaced electrode sheets disposed on either side of the current feeder post and being directly welded to the post along their center lines, the sheets being resiliently movable toward one another and resiliently springable outwardly, each of the electrode sheets comprising a central web portion and an integral substantially planar portion on each side of the web portion, an anodically active outer layer on at least part of the surface of the planar portions, the two web portions being directly attached to opposite sides of the current feeder post and each including two flange portions which are splayed outwardly from the current feeder post and are integral with the substantially planar portions of the electrode sheets, in the unconstrained condition the two adjacent free edges of the substantially planar portions of the two sheets being spaced wider

apart than the parts of the planar portions closest to the connection line with the flanges.

4,338,180

PHOTOELECTRODES FOR PHOTOELECTROCHEMICAL CELLS

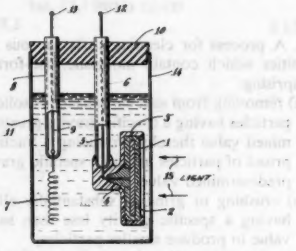
Michihiro Nakamura, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 25, 1980, Ser. No. 210,161

Claims priority, application Japan, Nov. 28, 1979, 54/154709; Jan. 24, 1980, 55/7552; Feb. 19, 1980, 55/19907; Jun. 16, 1980, 55/81794; Jul. 2, 1980, 55/90923

Int. Cl.³ C25B *11/04;* H01M *6/36*

U.S. Cl. 204—290 R 3 Claims



1. A photoelectrode for a photoelectro-chemical cell, which is essentially composed of a surface-chalcogenated molybdenum or tungsten metal, wherein the chalcogenated layer is doped with at least one element selected from Group III_b, IV_a or IV_b of the Periodic Table.

4,338,181

ELECTRODE CONTAINING EXTRACTION TREATED PARTICLES

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,584

Int. Cl.³ C25B *11/12;* C08K *5/02;* C08J *3/00*

U.S. Cl. 204—294 7 Claims

1. A process of treating polytetrafluoroethylene particles containing small amounts of wetting agent in admixture with carbon particles comprising contacting said mixture with chloroform to extract said wetting agent.

4,338,182

MULTIPLE-STAGE HYDROGEN-DONOR COAL LIQUEFACTION

Lonnie W. Vernon, and Peter S. Maa, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 13, 1978, Ser. No. 950,951

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 LE 15 Claims

1. A process for liquefying normally solid carbonaceous materials comprising the steps of:

(a) slurrying a particulate solid carbonaceous material with a suitable solvent such that the solvent/solid carbonaceous material weight ratio is within the range from about 0.5:1 to about 3:1;

(b) subjecting the resulting slurry to liquefaction in a first liquefaction stage wherein the temperature at the outlet of said stage is higher than the temperature at the inlet of said stage;

(c) separating at least 50 weight percent of the total liquid boiling within the range from about 400° to about 1000° F. from the effluent of the first liquefaction stage;

(d) slurrying at least a portion of the effluent remaining after the separation of step (c) with a suitable solvent such that the solvent/unconverted solid carbonaceous material weight ratio is within the range from about 0.5:1 to about 3:1;

(e) subjecting the resulting slurry of solvent and unconverted solid carbonaceous material to liquefaction conditions in a second liquefaction stage or zone; and

(f) recovering a liquid product from the second liquefaction stage.

4,338,183

METHOD OF SOLVENT EXTRACTION OF COAL BY A HEAVY OIL

John G. Gatsis, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 14, 1980, Ser. No. 196,428

Int. Cl.³ C10G *1/06*

U.S. Cl. 208—10 7 Claims

1. A process for the production of hydrogen-enriched hydrocarbonaceous products from hydrocarbonaceous materials which comprises:

(a) commingling coal and a crude petroleum oil containing asphaltenes and heavy oils in amount such that at least 80% of the crude boils above 650° F.;

(b) subjecting the resultant mixture to conversion together with a hereinafter described liquid recycle stream containing finely divided, unsupported metal catalyst in which the metal is selected from the group consisting of the elements from Groups IVB, VB, VIB, VIIB and VIII of the Periodic Table of Elements and mixtures thereof in a reaction zone at a temperature from about 55° F. to about 950° F. and a hydrogen pressure from about 500 psig to about 10,000 psig to liquefy at least a portion of said coal and to reduce the asphaltene content of said oil;

(c) separating gas from the resultant reaction zone effluent;

(d) then solvent deashing at least a portion of the reaction zone effluent with a relatively low molecular weight hydrocarbon solvent to separate therefrom a heavy liquid phase containing substantially all of the ash, unconverted coal, asphaltenes, relatively high molecular weight hydrocarbons and finely divided, unsupported metal catalyst; and

(e) supplying at least a portion of said heavy liquid phase to the reaction for use as said liquid recycle stream in the aforesaid step (b).

4,338,184

COAL CONVERSION IN THE PRESENCE OF ADDED ALKALI METAL COMPOUNDS

Peter S. Maa, Baytown; Lavanga R. Veluswamy, and Charles J. Vadovic, both of Houston, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 27, 1980, Ser. No. 200,710

Claims priority, application Japan, Oct. 26, 1979, 54-139028

Int. Cl.³ C10G *1/00, 1/06;* B01J *37/00*

U.S. Cl. 208—10 28 Claims

1. A process for converting coal or similar liquefiable carbonaceous solids into liquid hydrocarbons which comprises contacting said carbonaceous solids with molecular hydrogen under liquefaction conditions in a liquefaction zone in the presence of an added alkali metal compound, and in the absence of externally added hydrocarbon liquids and externally added water other than the inherent moisture in said carbonaceous solids.

4,338,185

RECOVERY OF OIL FROM OIL SANDS

Calvin D. Noelle, 1900 South Ocean Blvd., #14D, Pompano Beach, Fla. 33062

Filed Jan. 2, 1981, Ser. No. 222,129
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **4 Claims**

1. In the method of recovering oil from oil sand wherein the oil sand is tumbled in an aqueous alkaline solution to form a floating mass in which the oil is dispersed and the oil then recovered from the mass, the step of including in the aqueous alkaline solution 0.3 to 100 parts per million of a water-soluble low molecular weight anionic compound selected from the group consisting of alginic acid, mannuronic acid and the sodium salts thereof.

4,338,186

SHALE OIL PROCESS

Henry E. Reif, Bryn Mawr, and Jeffrey P. Schwedock, Aston, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 17, 1980, Ser. No. 207,537
Int. Cl.³ C10G *65/04, 65/12, 67/08*
U.S. Cl. 208—89 **4 Claims**

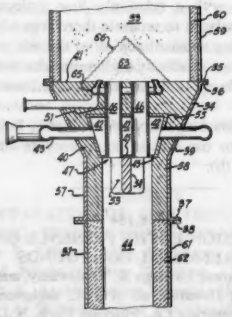
1. A process for preparing hydrocarbon aviation fuels from a raffinate of an HCl-treated shale oil which comprises hydrotreating said raffinate, removing ammonium chloride by water quenching the hydrotreated bottoms liquid product, separating hydrocracker feed consisting of said water-quenched stream which is essentially free of sulfur and nitrogen materials, hydrocracking said separated stream and distilling said hydrocarbon fuels from said hydrocracked product.

4,338,187

SOLIDS FEEDING DEVICE AND SYSTEM

Robert J. Gartside, Auburndale, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Oct. 22, 1979, Ser. No. 86,951
Int. Cl.³ C10G *9/30*
U.S. Cl. 208—127 **6 Claims**



1. A process for continually feeding particulate solids to a reaction chamber comprising the steps of:

a. providing a bed of solids in a non-fluidized state;

b. delivering aeration gas under pressure to a localized section of the bed of solids immediately above a conduit extending from the bed of solids to a reaction zone, said aeration gas having a flow rate less than a rate necessary for incipient fluidization of the bed of solids such that only the solids proximate to said conduit are fluidized; and

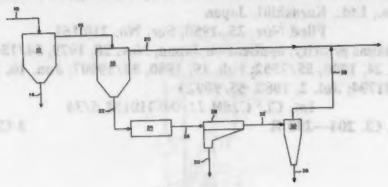
c. passing the fluidized solids downwardly by gravity through the conduit to the reaction chamber.

4,338,188

COAL CLEANING PROCESS

Robert P. Guerre, Seabrook, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 13, 1979, Ser. No. 57,250
Int. Cl.³ B03B *7/00*
U.S. Cl. 209—2 **14 Claims**



1. A process for cleaning carbonaceous solids of varying densities which contain inorganic, ash-forming constituents comprising:

(a) removing from said carbonaceous solids substantially all particles having a specific gravity greater than a predetermined value thereby producing a fraction of solids comprised of particles having a specific gravity less than said predetermined value;

(b) crushing or grinding substantially all of said particles having a specific gravity less than said predetermined value to produce smaller particles;

(c) separating said smaller particles into a high density fraction and a low density fraction; and

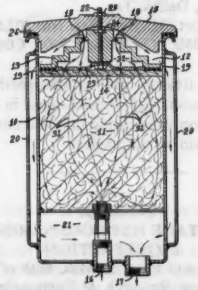
(d) recovering said low density fraction produced in step (c) as clean carbonaceous solids.

4,338,189

OIL RECONDITIONING DEVICE

Lester L. Johnson, Sr., 5181 River Bluff La., Jacksonville, Fla. 32211

Filed Mar. 23, 1981, Ser. No. 246,684
Int. Cl.³ B01D *27/08, 35/18*
U.S. Cl. 210—180 **13 Claims**



8. In an oil reconditioning device including a housing, an inlet at the lower end of the housing leading into a filter chamber in the central portion of and extending across the internal dimension of said housing for removing solid contaminants, and an upper chamber extending across the internal dimension of said housing for receiving oil from said filter chamber and cascading the oil over tiers on the outside heated surface of a hollow, convex frustoconical element where liquid contaminants in said oil are vaporized and vented to the atmosphere through a vent in said device; the improvement which comprises a purified oil receiving chamber extending across the

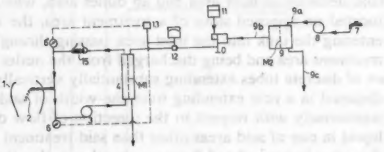
internal dimension of said housing located below said filter chamber, a plurality of spaced conduits about said housing communicating between said upper chamber and said purified oil receiving chamber, and an outlet in said purified oil receiving chamber for delivering purified oil therefrom, each of said conduits being sufficiently large in cross sectional area to conduct all of the oil flowing from said upper chamber to said purified oil receiving chamber without reducing the overall flow rate of the oil passing through said device thereby to inhibit oil buildup in said upper chamber to minimize oil leakage out of said vent.

4,338,190

PERITONEAL ARTIFICIAL KIDNEY

Menahem A. Kraus, and Moshe A. Frommer, both of Rehovot, Israel, assignors to A. T. Ramot Plastics Ltd., Tel Aviv, Israel

Filed Feb. 8, 1977, Ser. No. 766,581
Claims priority, application Israel, Feb. 13, 1976, 49031
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—195.2 **2 Claims**



1. An artificial kidney including a peritoneal dialysis system which prevents protein loss, permits the peritoneal fluid to be circulated through the peritoneal cavity at a high circulation rate, and obviates the need for heat sterilization, comprising: a closed-loop peritoneal circuit including means for introducing a prepared solution into the peritoneal cavity to draw toxic metabolites therefrom into the fluid, the fluid exiting from the cavity as peritoneal fluid, a separator containing a selective membrane having a high permeability to low molecular weight toxic metabolites but a low permeability to high molecular weight protein, and means for circulating the peritoneal fluid through the separator on one side of the selective membrane, the fluid exiting from that side of the membrane being returned to the peritoneal cavity; and a single-pass reconstitution circuit including a hyperfilter impermeable to ions and to organic matter, and having an inlet, a permeate outlet, and a residue outlet, means for introducing tap water into the inlet of the hyperfilter, means for introducing a concentrate including sugar and salts into the water exiting from the permeate outlet of the hyperfilter to form a water concentrate solution, and means for utilizing the resulting water-concentrate solution for maintaining substantially constant the original concentration of sugar and salt in the peritoneal fluid as the waste metabolites, passing through said separator, are moved from the peritoneal fluid, said separator being a dialyser, and said last-named means introducing said water-concentrate solution into the dialyser on the other side of the selective membrane.

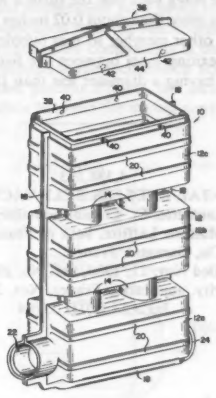
4,338,191

APPARATUS FOR TREATING FLUIDS

Edward J. Jordan, Willoughby, Ohio, assignor to Jet Aeration Company, Cleveland, Ohio

Filed Jun. 20, 1977, Ser. No. 807,930
Int. Cl.³ B01D *57/00*; C02B *3/06*
U.S. Cl. 210—199 **19 Claims**

1. Apparatus for treating a fluid with a treating agent comprising a container having at least three vertically spaced chambers, the lowermost one of said vertically spaced chambers having an inlet for introducing fluid thereinto and an outlet for discharging fluid therefrom, vertically spaced support means in said container, treating agent holding means removably insertable into said container and being supported in a generally vertical position by said vertically spaced support means, said vertically spaced support means comprising wall means defining generally vertically aligned openings communicating adjacent chambers with each other, said



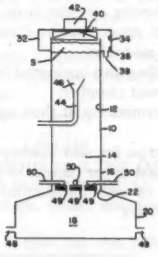
aligned openings receiving said treating agent holding means therethrough in the assembled condition of the latter with said container, said container being of a large enough size to completely receive said treating agent holding means therein.

4,338,192

CLARIFIER BUBBLE GENERATION AND DISTRIBUTION NOZZLE

Eugene L. Krasnoff, and Oscar Luthi, both of Nashua, N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 970,552, Dec. 18, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,869
Int. Cl.³ B03D *1/00*
U.S. Cl. 210—221.2 **6 Claims**



1. A liquid purifier for removing contaminants from a liquid, comprising: a vessel; conduits for conducting pressurized dissolved gas in water into the vessel; a first member connected to each conduit and having a hole through which the dissolved gas in water flows; a solid member normally axially-spaced a predetermined distance from the first member to provide empty space between the first member and the solid member, said solid member having a bore extending upwardly from its lower end; and means including a post extending snugly into said bore for normally supporting said solid member away from said first member while permitting axial movement only of said solid member toward said first member in response to the flow of water outwardly through said empty space, one of said first member and said solid member having a recess formed on the surface facing the other member, said hole in the

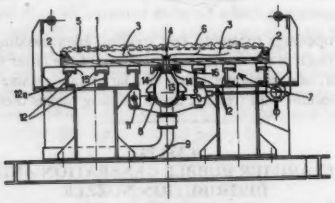
first member being dimensioned and said recess being shaped so that the axial pressures and the radial velocities of the water flowing outwardly through said empty space are such that the solid member moves axially toward the first member and floats a predetermined distance from the first member, said predetermined distance being such that the surface forming the edge of the recess is no more than about 0.02 inches from the opposing surface of the other member so that bubbles are formed with most bubbles exiting from between the first member and the solid member having a diameter less than 100 microns.

4,338,193

HORIZONTAL ENDLESS BELT VACUUM FILTER

Jean-Claude Lautrette, St. Crepin-Ibouviller, and Christian A. Queyroix, Maisons Laffitte, both of France, assignors to F. Aoustin et Cie, Darnetal, France

Filed Nov. 21, 1980, Ser. No. 209,013
Claims priority, application France, Nov. 29, 1979, 79 29383
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—401 **11 Claims**



1. A vaccum filter comprising a driven continuous conveyor belt having openings therein allowing liquid flow therethrough;

a continuous filtering belt above said conveyor belt;

a table supporting said conveyor belt;

a vacuum chamber forming part of said table;

said chamber having an inlet in its upper part below said openings and upper flanges extending outwardly from both sides of said inlet;

said table including also horizontal longitudinal supports on each side of said chamber;

said supports terminating at their upper ends in horizontal flanges; and

plastic guide strips for said conveyor belt frictionally engaged with said upper flanges of said chamber and with said flanges of said longitudinal supports in abutting contact therewith.

4,338,194

METHOD OF PRODUCING SOLUTE-REJECTING DYNAMIC MEMBRANE FILTERS AND FILTERS INCLUDING SUCH MEMBRANES

Gerald Tanny, Ann Arbor, Mich., assignor to Yeda Research & Development Company Ltd., Rehovot, Israel

Filed Jun. 5, 1978, Ser. No. 912,549
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—490 **24 Claims**

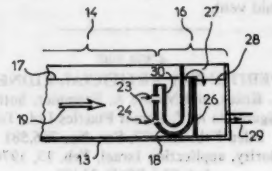
15. A solute-rejecting dynamic membrane filter, comprising: a porous substrate having a pore size of 0.025–3 microns, and a bed of silica particles deposited thereon, said silica particles being substantially spherical and uniform, and having a nominal particle diameter of 20–80 Å.

4,338,195

LIQUID TREATMENT APPARATUS

Georges Treyssac, Marcq-en-Baroeul, France, assignor to Societe Anonyme d'Etudes de Recherches et de Productions d'Agents Chimiques ERPAC, France

Filed Nov. 3, 1980, Ser. No. 203,256
Int. Cl.³ B01D *21/24*
U.S. Cl. 210—519 **8 Claims**



1. Apparatus for the treatment of a liquid comprising:

a tank defining an inlet area and an outlet area, which are located on opposed sides of a treatment area, the liquid entering the tank into the inlet area, passing through the treatment area and being discharged from the outlet area;

a set of discrete tubes extending substantially vertically and disposed in a row extending over the width of said area transversely with respect to the direction of flow of the liquid in one of said areas other than said treatment area, the tubes being isolated from one another and extending vertically substantially from the bottom of the tank to the upper surface of the liquid, each of said tubes being U-shaped with a first side which ascends to at least the intended level of the upper surface of liquid in said tank and a second side which ascends at most to said upper surface of the liquid, said second side having at least one orifice for connection with said treatment area to define a stream of liquid in said treatment area, the orifices in different tubes being located at different levels and being of variable but predetermined different dimensions according to their locations and the rate of flow to be imposed on the streams which they respectively define, said first side of each tube also having an opening for connection to the outside of said tank located at the level of the intended upper surface of liquid in the tank and separated from the latter in a liquid-tight manner except for connection through said tube.

4,338,196

BIOLOGICAL TREATMENT OF A FORMALDEHYDE-CONTAINING WASTE WATER CONTACTED WITH A BIOMASS TOGETHER WITH A NITROGEN COMPOUND

Leanne Mayerle, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,767
Int. Cl.³ C02F *3/28, 3/30*
U.S. Cl. 210—610 **7 Claims**

1. In a process which comprises introducing into a biological digestor (a) a nitrogen compound which is a member of the group consisting of ammonia, ammonium salts, amides, and primary and secondary amines along with (b) a waste water stream containing formaldehyde for the purpose of biologically decomposing said formaldehyde by the action of microorganisms contained in said digestor, the improvement which comprises:

introducing said nitrogen compound into said digestor in a nitrogenous stream which is separate from said formaldehyde-containing waste water stream, whereby mixing of the nitrogen compound with the formaldehyde-containing waste water is prevented until both the nitrogenous stream and the formaldehyde-containing waste water

stream have become admixed into the liquid contents of the biological digestor.

4,338,197

METHOD AND APPARATUS FOR THE TREATMENT OF WASTEWATER

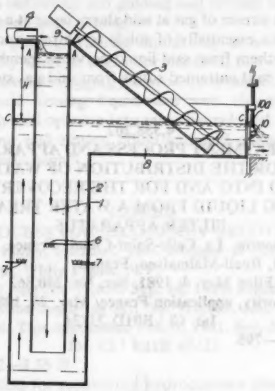
David H. Bolton, Linthorpe, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 23, 1981, Ser. No. 246,434

Claims priority, application United Kingdom, Apr. 3, 1980, 8011384

Int. Cl.³ C02F 3/22

U.S. Cl. 210—621 **10 Claims**



1. In a method for the treatment of wastewater which comprises the steps of introducing wastewater into, and circulating it around, a system comprising a downcomer and a riser in direct communication with each other at their lower ends, the level of the wastewater in the downcomer being maintained above the level of the wastewater in the riser to provide a hydrostatic pressure head which causes circulation of the wastewater around the system, supplying a gas containing free oxygen to the wastewater as it passes through the downcomer, pumping the wastewater from, or from near, the top of the riser back into the downcomer at or near the top thereof, and removing treated wastewater from the riser at substantially the same rate as wastewater is introduced into the system, the improvement which comprises increasing the height at which treated wastewater is removed from the riser thereby increasing the level of wastewater in the riser when operating under conditions that are less onerous than the design conditions in order to provide a reduction in the energy required for pumping the waste water from the riser into the downcomer.

4,338,198

TWO STAGE FLUID BED REGENERATION OF SPENT CARBON

George N. Brown, Lexington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,583

Int. Cl.³ B01J 20/34; B01D 53/08; C02F 1/28; C01B 31/10

U.S. Cl. 210—673 **12 Claims**

1. In a method for regenerating wet spent carbon containing organic volatile impurities comprising the steps of

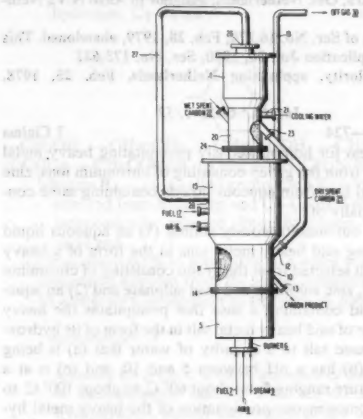
(a) heating the wet spent carbon in a drying zone at a temperature wherein volatilization of the impurities in the carbon is minimized utilizing a hereinafter specified drying gas to form dried spent carbon containing volatile impurities,

(b) passing the dried spent carbon to a reactivation zone,

(c) contacting the dried spent carbon in the reactivation zone with combustion gases at pyrolysis conditions which liberate the volatile impurities therefrom, to produce reactivated dried spent carbon and reactivation zone gaseous effluent including liberated volatile impurities,

(d) passing the reactivation zone gaseous effluent to an incineration zone, the incineration zone being contiguous and in open communication with the reactivation zone, and

(e) burning the combustible components in the reactivation zone gaseous effluent in the incineration zone to form an incineration zone gaseous effluent, the incineration zone being intermediate between the drying zone and the reactivation zone,



the improvement which comprises passing a first portion of the incineration zone gaseous effluent to the drying zone as the drying gas in step (a) producing a drying zone gaseous effluent containing a minimum amount of volatile impurities, the drying zone gaseous effluent being recycled to the incineration zone, and passing a second portion of the incineration zone gaseous effluent directly to a scrubber for removal of particulates and oxidized forms of inorganics prior to exhausting clean gas to the atmosphere.

11. The method of claim 1 wherein the wet spent carbon is recovered from a liquid or gaseous stream, processed according to claim 1 and reused.

4,338,199

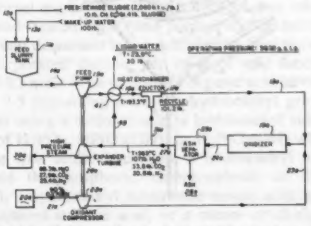
PROCESSING METHODS FOR THE OXIDATION OF ORGANICS IN SUPERCRITICAL WATER

Michael Modell, Cambridge, Mass., assignor to Modar, Inc., Natick, Mass.

Filed May 8, 1980, Ser. No. 147,946

Int. Cl.³ C02F 1/72

U.S. Cl. 210—721 **29 Claims**



1. A method of obtaining useful energy and oxidizing or-

ganic materials in an oxidizer, said method comprising forming a reaction mixture of said organic material, water and oxygen, and reacting said mixture in a single homogeneous fluid phase under conditions characterized by a temperature of at least 377° C. and a pressure of at least 220 atmospheres to cause said organic materials to be oxidized thereby raising the temperature of said water and oxidiation products.

4,338,200

PROCESS FOR THE REMOVAL OF HEAVY METALS FROM AQUEOUS LIQUIDS

Foeke Zeijlstra, Oss, Netherlands, assignor to Akzo N.V., Netherlands

Continuation of Ser. No. 16,170, Feb. 28, 1979, abandoned. This application Jul. 30, 1980, Ser. No. 173,632

Claims priority, application Netherlands, Feb. 25, 1978, 7802123

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—724 **7 Claims**

1. A process for homogeneously precipitating heavy metal ions selected from the group consisting of chromium ions, zinc ions, and lead ions from aqueous liquids containing same consisting essentially of

separately but simultaneously adding (1) an aqueous liquid containing said heavy metal ions in the form of a heavy metal salt selected from the group consisting of chromium sulphate, zinc sulphate, and lead sulphate and (2) an aqueous liquid containing a base that precipitates the heavy metal ion of said heavy metal salt in the form of its hydroxide or basic salt to a quantity of water that (a) is being stirred, (b) has a pH between 5 and 10, and (c) is at a temperature ranging from about 60° C. to about 100° C. to cause homogeneous precipitation of the heavy metal hydroxide or basic salt, wherein the pH of the resulting solution is maintained between 6 and 8 by adjusting the rates of addition of aqueous liquid (1) and aqueous liquid (2) and wherein the temperature is held within the range from about 60° C. to about 100° C. during the homogeneous precipitation, and separating the precipitated heavy metal hydroxide or basic salt from the resulting solution.

4,338,201

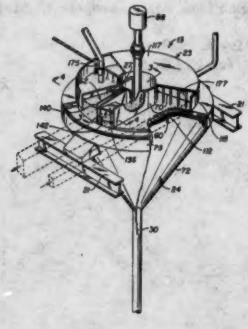
CONTINUOUS SEPARATION SYSTEM

Joseph C. V. Ducasse, Martinez, Calif., assignor to Fabcon, San Francisco, Calif.

Division of Ser. No. 66,712, Aug. 15, 1979, Pat. No. 4,256,582, which is a continuation-in-part of Ser. No. 906,078, May 15, 1978, abandoned. This application Dec. 5, 1980, Ser. No. 213,290

Int. Cl.³ B01D *33/24, 37/00*

U.S. Cl. 210—771 **11 Claims**



1. A method of separating solid and liquid material in a slurry layer on a screen comprising the steps of:

continuously depositing said slurry on a moving liquid pervious member to form a slurry layer thereon;

introducing a condensible vapor at a first surface of said layer;

reducing the pressure at a second surface of said layer with respect to the pressure at said first surface in order to cause liquid to flow through said liquid pervious member so that the liquid content of said slurry layer becomes progressively lower as said layer is carried on said moving liquid pervious member;

withdrawing liquid from said second surface of said layer, said vapor passing through said layer and becoming superheated upon such passage therethrough, said superheated vapor evaporating further liquid from said solids to dry them;

directing a stream of gas at said slurry layer at a point where it consists essentially of solids to entrain said solids and remove them from said liquid pervious member; and

separating said entrained solids from said gas stream.

4,338,202

WATER TREATMENT PROCESS AND APPARATUS AND DEVICE FOR THE DISTRIBUTION OF WATER TO BE TREATED INTO AND FOR THE RECOVERY FROM WASHING LIQUID FROM A WATER TREATMENT FILTER APPARATUS

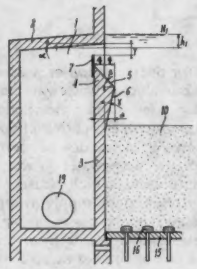
Robert Louboutin, La Celle-Saint-Cloud, France, assignor to Degremont, Rueil-Malmaison, France

Filed Mar. 4, 1981, Ser. No. 240,362

Claims priority, application France, Mar. 26, 1980, 80 06665

Int. Cl.³ B01D *23/24*

U.S. Cl. 210—795 **24 Claims**



19. A water treatment process comprising:

providing a water treatment filter apparatus including a tank containing therein filter material, a channel coupled to and extending along the length of said tank, said channel having an opening into said tank at a level above said filter material, said opening being defined at the lower portion thereof by an overflow including a first inclined plane inclined downwardly and inwardly into said tank and a second inclined plane inclined downwardly and outwardly of said tank from said first inclined plane, and the upper end of said channel being closed;

conducting a water treatment operation comprising:

introducing water to be treated into said channel;

distributing said water to be treated to said tank by passing said water to be treated through said opening and over said overflow into said tank;

passing said water to be treated downwardly through said filter material, said filter material filtering out matter from said water to be treated and retaining said matter as clogging material, thereby forming treated water; and

removing said treated water from said tank at a location below said filter material; and

periodically terminating said water treatment operation and

conducting a washing operation to remove said clogging material from said filter material, said washing operation comprising:

passing washing liquid and gas upwardly through said filter material to loosen therefrom said clogging material, while maintaining said channel under hydrostatic pressure, a portion of said filter material being entrained by and lifted upwardly within said tank by said washing liquid and gas, contacting said entrained and lifted filter material adjacent said channel against said second inclined plane and thereby deflecting said filter material away from said opening, and allowing said entrained and lifted filter material to settle, while contacting said settling filter material adjacent said channel against said first inclined plane and thereby deflecting and guiding said settling filter material away from said opening;

thereafter passing washing liquid only as a rinsing liquid upwardly through said filter material, thereby removing said loosened clogging material from said filter material;

passing said rinsing liquid and said clogging material through said opening into said channel; and

discharging said rinsing liquid and said clogging material from said channel.

4,338,203

PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

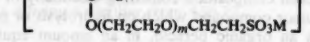
Division of Ser. No. 75,635, Sep. 14, 1979, abandoned, and a continuation-in-part of Ser. No. 916,985, Jun. 19, 1978, abandoned. This application Feb. 5, 1981, Ser. No. 231,647

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **9 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a sulfonated, ethoxylated, acrylic acid polymer having recurring units of the formula:



wherein m is an integer of from 1 to 4 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium, and wherein the number average molecular weight of said sulfonated, ethoxylated, acrylic acid polymer is about 3,000 to about 50,000,

(B) forcing the said fluid through the formation, and

(C) recovering hydrocarbons through the production well.

4,338,204

DETERGENT SOFTENER CONTAINING ANIONIC, AMINE, AND WATER SOLUBLE CATIONIC

Gianfranco L. Spadini, Cincinnati, Ohio; Peter N. Crisp, Gateshead, and Allan C. McRitchie, Whitley Bay, both of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1980, Ser. No. 189,413

Claims priority, application United Kingdom, Sep. 29, 1979, 7933869

Int. Cl.³ C11D *1/65*; D06M *13/46*

U.S. Cl. 252—8.75 **25 Claims**

1. A textile softening and cleaning composition consisting essentially of

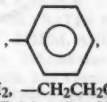
(a) from about 3% to about 30% of an anionic surfactant

(b) from about 1% to about 25% of a water-insoluble tertiary amine having the general formula

wherein R_1 is selected from C_{10}–C_{26} alkyl and alkenyl groups,

R_2 is selected from C_{10}–C_{26} alkyl and alkenyl groups, or if R_1 is selected from C_{20}–C_{26} alkyl and alkenyl groups, R_2 is also selected from C_1–C_7 alkyl groups.

R_3 has the formula $—CH_2Y$ where Y is selected from hydrogen, C_1–C_6 alkyl



$—CH_2OH$, $—CH{=}CH_2$, $—CH_2CH_2OH$, $—CH_2CN$, $—CH_2CO(R_4)$, $—CH_2CO(N(R_5)_2)$ and $—CH_2CH_2N(R_6)_2$

wherein R_4 is a C_1–C_4alkyl group, each R_5 is independently selected from hydrogen and C_1–C_4 alkyl and each R_6 is independently selected from hydrogen and C_1–C_{20} alkyl and

(c) from about 0.5% to about 10% of a water soluble cationic compound selected from the group consisting of

(i) quaternary ammonium compounds of formula

$$R_7R_8R_9R_{10}N^+X^-$$

wherein R_7 is C_8–C_{16} alkyl, and each of R_8, R_9 and R_{10} is independently selected from C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl, benzyl and $—(C_2H_4O)_xH$ where x has a value of from about 2 to about 5, not more than one of R_8, R_9 and R_{10} being benzyl, and wherein X is an anion; and

(ii) aliphatic amines of formula

$$R_{11}R_{12}R_{13}N$$

wherein R_{11} is C_8–C_{18} alkyl, R_{12} and R_{13} are independently selected from hydrogen, C_1–C_4 alkyl, C_1–C_4 hydroxy alkyl, benzyl, $—(C_2H_4O)_xH$, where x has a value of from about 2 to about 5, and water soluble salts thereof,

provided that the molar ratio of component (c) to component (a) does not exceed 1:1.

4,338,205

LUBRICATING OIL WITH IMPROVED DIESEL DISPERSANCY

Max J. Wisotsky, Highland Park, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 25, 1980, Ser. No. 181,150

Int. Cl.³ C10M *1/54, 1/44, 1/40*

U.S. Cl. 252—32.5 **9 Claims**

1. A lubricating oil composition exhibiting improved dispersancy in a diesel engine comprising a hydrocarbon lubricating oil and an acid-treated, oil-soluble borated alkenyl succinimide dispersant, said dispersant being acid treated after boration by having incorporated therein, per mole of said succinimide, about 0.1 to 0.5 mole of an oil-soluble organic acid having a pK of −10 to +5 containing a C_9–C_{70} hydrocarbyl group, said organic acid being a sulfonic acid, a hydrocarbyl substituted derivative of H_3PO_4, $HP(O)(OH)_2$ or $H_2P(O)(OH)$ which has at least one free acidic hydrogen, a hydrocarbyl mono or di-substituted thiophosphoric, thiophosphinic or thiophosphonic acid, a hydrocarbyl substituted maleic acid, a hydrocarbyl substituted sulfuric acid, or a mono- or di-alpha-substituted hydrocarbyl carboxylic acid, the alpha-substituent being hydrogen, nitrilo, nitro, halo or cyano.

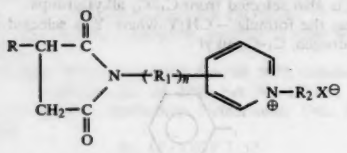
4,338,206

QUATERNARY AMMONIUM SUCCINIMIDE SALT COMPOSITION AND LUBRICATING OIL CONTAINING SAME

Kenneth G. Hammond, and Harry Chafetz, both of Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.

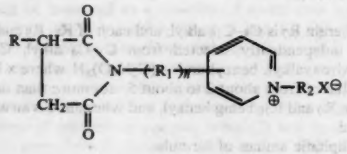
Filed Mar. 23, 1981, Ser. No. 246,512
Int. Cl.³ C10M 1/32
U.S. Cl. 252—34 11 Claims

1. A quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R_1 is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R_2 is a hydrocarbyl radical having from 1 to 10 carbon atoms, n has a value of 0 or 1, and X is a halide radical.

7. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R_1 is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R_2 is a hydrocarbyl radical having from 1 to 10 carbon atoms, n has a value of 0 or 1, and X is a halide radical.

4,338,207

ADDITIVE COMPOSITION FOR TURBINE OIL

J. Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 70,574, Aug. 29, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,256
Int. Cl.³ C10M 1/26, 1/34, 1/42
U.S. Cl. 252—47.5 3 Claims

1. A lubricating oil additive composition containing 0.05 to 1 parts diisobornyldiphenylamine and 0.05 to 1 parts of benzyl (4-hydroxy-3,5-di-t-butyl)dithiobenzoate.

4,338,208

HYDRATED $MGCL_2$ REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 22, 1980, Ser. No. 219,010
The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.
Int. Cl.³ C09K 5/06; F24J 3/02
U.S. Cl. 252—70 15 Claims

1. A reversible liquid/solid phase change composition comprising hydrated $MgCl_2$ and as a nuclearing additive, one or more of the group of CaO, $Ca(OH)_2$, $Mg(OH)_2$, MgO or CaC_2O_4 added to the composition in an amount effective to suppress average supercooling of the $MgCl_2$ liquid phase to about 2° C. or less.

4,338,209

METAL CORROSION INHIBITOR

Isao Manabe, and Akiyoshi Inubushi, both of Tokushima, Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 943,968, Sep. 20, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,451
Claims priority, application Japan, Oct. 1, 1977, 52-118368
Int. Cl.³ C09K 5/00; C23F 11/18
U.S. Cl. 252—75 3 Claims

1. A metal corrosion inhibitor consisting essentially of per 100 parts by weight of a compound (a) selected from the group consisting of benzoic acid, sodium benzoate, and potassium benzoate, 1.3 to 20 parts by weight of a compound (b) selected from the group consisting of nitrous acid, sodium nitrite and potassium nitrite, 3.8 to 120 parts by weight of a compound (c) selected from the group consisting of phosphoric acid, sodium dihydrogenphosphate, disodium hydrogenphosphate, trisodium phosphate, potassium dihydrogenphosphate, dipotassium hydrogenphosphate and tripotassium phosphate, and 1 to 20 parts by weight of a compound (d) selected from the group consisting of mercaptobenzothiazole, its salts, benzotriazole and tolyltriazole, the amount of sodium benzoate and potassium benzoate being calculated as benzoic acid, the amount of sodium nitrite and potassium nitriate being calculated as nitrous acid, the amount of sodium dihydrogenphosphate, disodium hydrogenphosphate, trisodium phosphate, potassium dihydrogenphosphate, dipotassium hydrogenphosphate and tripotassium phosphate being calculated as phosphoric acid, and the amount of mercaptobenzothiazole salts being calculated as mercaptobenzothiazole.

4,338,210

BLEACH COMPOSITION

Anthony H. Clements, Clwyd, Wales, and Leigh, Arthur G., Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 176,959, Aug. 11, 1980, abandoned. This application Feb. 24, 1981, Ser. No. 237,792
Claims priority, application United Kingdom, Aug. 16, 1979, 7928589
Int. Cl.³ C11D 9/42
U.S. Cl. 252—96 14 Claims

1. A bleach composition consisting essentially of (a) a peracid precursor compound which on hydrolysis or perhydrolysis forms an organic peracid, in an amount equivalent to 0.1–40 parts by weight of organic peracid produced therefrom, and (b) 0.1–40 parts by weight of a water soluble bromide salt which delivers bromide ions in aqueous media, the theoretical molar equivalent ratio of said organic peracid to said bromide salt being not more than 5:1, in the substantial absence of aldehydes, ketones and materials which yield aldehydes or ketones in aqueous solution.

4,338,211

LIQUID SURFACTANT SKIN CLEANSER WITH LATHER BOOSTERS

Paul Stiros, Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 164,702, Jun. 30, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 252,691
Int. Cl.³ C11D 1/831, 3/20, 3/46, 17/08
U.S. Cl. 252—142 12 Claims

1. A liquid skin cleanser composition comprising:

(A) about 5–30 weight percent anionic surfactant selected from the group consisting of fatty alkyl sulfates, fatty alkyl ether sulfates and mixtures thereof;

(B) about 0.5–12 weight percent of a lather boosting mixture consisting essentially of free fatty acids, fatty alkylol amide having a ratio of about 1:3 to about 3:1; and

(C) water;

wherein said free fatty acids have a carbon atom chain length of from 8 to 18 and wherein said fatty acids consist of at least about 25% of carbon chain lengths of less than 14, and wherein said lather boosting mixture is present in an amount equal to about 10% to about 40% of the weight to the surfactant, and wherein said composition has a pH of from about 4.0 to about 7.0.

4,338,212

MIXED NONIONIC DETERGENT COMPOSITION

Ingo Wegener, Dusseldorf; Johann Glasl, Solingen, and Achim Werdehausen, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,244

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948100

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.³ C11D *1/825*

U.S. Cl. 252—174.22 **2 Claims**

1. A mixed nonionic detergent composition having a reduced viscosity at room temperature and whose aqueous solution has a substantially reduced viscosity at room temperature consisting essentially of:

(a) from 40% to 60% by weight of at least one compound of the formula:

$$R^1—O—(CH_2CH_2O)_n—H$$

wherein R^1 represents the hydrocarbon moiety of a fatty alcohol having from 6 to 18 carbon atoms and n is a number from 4 to 15, and

(b) from 60% to 40% by weight of at least one compound of the formula:

$$H—(OCH_2CH_2)_p—O—CH(R^2)—CH_2—O—(CH_2CH_2O)_q—H$$

wherein R^2 represents an alkyl having from 8 to 14 carbon atoms and p and q are each a number from 0 to 15, the sum of p+q being a number from 4 to 15.

4,338,213

AQUEOUS CHEMILUMINESCENT SYSTEMS

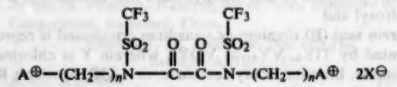
Shin-Shyong Tseng, and Michael M. Rauhut, both of Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 122,621, Feb. 19, 1980, Pat. No. 4,282,357, which is a continuation-in-part of Ser. No. 956,567, Nov. 1, 1978, Pat. No. 4,226,738. This application Apr. 13, 1981, Ser. No. 253,327

Int. Cl.³ C09K *3/00*

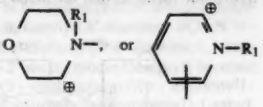
U.S. Cl. 252—188.3 CL **14 Claims**

1. A composition for generating chemiluminescent emission comprising an aqueous solution of a water-soluble organic fluorescer having spectral emission in the range from about 330 to about 1000 nanometers and a water-soluble amide of oxalic acid represented by the formula:



(I)

wherein $A^{\oplus}$ represents



wherein R_1 represents hydrogen, or alkyl (C_1-C_6), n is an integer from 2 to 6, and $X^{\ominus}$ is an anion in proportions capable of producing chemiluminescence on reaction with hydrogen peroxide.

4,338,214

MILD-TO-THE-SKIN ANIONIC TENSIDES OF BASIC PROTEIN AMINOLYSATES PREPARATIONS CONTAINING THEM, AND THEIR USE

Herbert Fischer; Fanny Scheuermann, both of Düsseldorf; Christian Hase, Erkrath, and Horst-Jürgen Krause, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

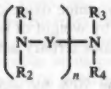
Filed Oct. 16, 1980, Ser. No. 197,650

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945100

Int. Cl.³ C07G *7/00*; C11D *1/32*

U.S. Cl. 252—545 **13 Claims**

1. Mild-to-the-skin salts of anionic tensides of the sulfonic acid and sulfuric acid half ester type containing as the ion of opposite charge for salt formation, a highly basic protein aminolysate obtained by aminolysis of at least one protein with at least one aliphatic polyamine, said protein aminolysate having the formula



wherein R_1 is a peptide radical when n is 1 and, when n is 2 or 3, R_1 is a member selected from the group consisting of hydrogen and a peptide radical with a proviso that at least one peptide radical is present, said peptide radical being connected to nitrogen atom by a carboxyl group of a peptide radical having a molecular weight of from 200 to <5,000;

R_2, R_3 and R_4 are members selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, alkylol having 2 to 4 carbon atoms, and alkylazaalkyl having 3 to 6 carbon atoms;

Y is an alkylene having from 1 to 4 carbon atoms, and

n is an integer from 1 to 3.

4,338,215

CONVERSION OF RADIOACTIVE WASTES TO STABLE FORM FOR DISPOSAL

Peter T. B. Shaffer, Grand Island, N.Y.; Rustum Roy, and Norman H. Macmillan, both of State College, Pa., assignors to Kennecott Corporation, Stamford, Conn.

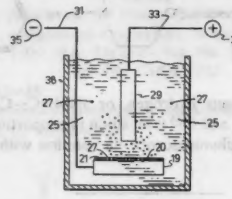
Filed Sep. 24, 1979, Ser. No. 78,119

Int. Cl.³ G21F *9/34*

U.S. Cl. 252—628 **23 Claims**

1. A method for converting radioactive waste material into a stable article for disposal or storage which comprises electrolyzing a bath containing ions of a corrosion-resistant electrodepositable metal or of a plurality of materials including at least one such metal, in the presence of a solid state radioactive waste material which contains a radionuclide selected from the group consisting of strontium 90 and cesium 137 and mixtures

thereof in one or more oxide and/or oxyhydroxide and/or hydroxide forms so that the metal or materials including metal



is/are deposited on a cathode and bind(s) the radioactive waste thereto.

4,338,216

STABILIZATION OF AQUEOUS TERTIARY DI-β-HYDROXY AMINE OXIDES

Gary W. Earl, Bexley, and Howard M. Hickman, Worthington, both of Ohio, assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Dec. 26, 1979, Ser. No. 106,747
Int. Cl.³ B01J *13/00*; B01F *17/16*; C11D *1/75*
U.S. Cl. 252—311 **26 Claims**

1. A method for stabilizing an aqueous tertiary di-(β-hydroxy organo) amine oxide blend, comprising between 10% and 70% by weight of a tertiary di (β-hydroxy organo) amine oxide, and between 20% and 80% by weight water which splits into layers upon standing, which method comprises incorporating therein a stabilizing proportion of an amine oxide salt which is the reaction product of a tertiary amine oxide and a protic acid, provided that when the tertiary amine oxide of the salt is the same as the tertiary amine oxide of the blend, then the tertiary amine oxide of the stabilized blend is between 0% and 70% by weight of said blend.

15. A stabilized aqueous tertiary amine oxide blend consisting essentially of:

(a) between 10% and 70% by weight of a tertiary di-(β-hydroxy organo) amine oxide;

(b) a stabilizing proportion of an amine oxide salt which is the reaction product of a tertiary amine oxide and a protic acid; and

(c) between 20% and 80% by weight of water, provided that when the tertiary amine oxide of said salt (b) is the same tertiary amine oxide of (a), then said amine oxide (a) is between 0% and 70% by weight of said blend.

4,338,217

ANTIFOAMS

Ewald Pirson, Burghausen; Jakob Schmidlkofer, Mehring-Öd, and Ernst Innertsberger, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,162
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903725
Int. Cl.³ B01D *19/04*
U.S. Cl. 252—358 **2 Claims**

1. An antifoam consisting essentially of an organopolysiloxane consisting of units of the formula

$$(RO)_nCH_3SiO_{\frac{3-n}{2}}$$

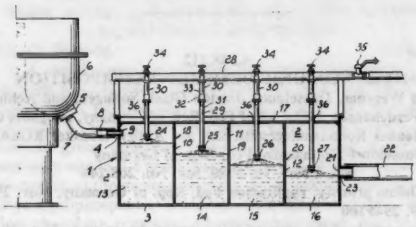
in which R is an alkyl radical having from 1 to 4 carbon atoms, n has an average value of from 0.5 to 1.4 and a viscosity of from 5 to 40 $mm^2.s^{-1}$ at 25° C. and from 0.1 to 30 percent by weight based on the weight of the organopolysiloxane of a solid dispersed in said organopolysiloxane.

4,338,218

DEVICE FOR ELIMINATION OF FOAM

Angelo Spinazzi, Landriano, Italy, assignor to Rollwash Italiana S.p.A., Milan, Italy

Filed Dec. 18, 1978, Ser. No. 970,770
Claims priority, application Italy, Dec. 19, 1977, 42913 A/77
Int. Cl.³ B01D *19/00*
U.S. Cl. 252—361 **3 Claims**



1. A device for elimination of foam which forms on the surface of a liquid comprising, a tank with a bottom wall and side walls and having an inlet for the liquid and, in a position remote from said inlet, an outlet opening into a discharge pipe, a plurality of spaced partition walls arranged between said inlet and said outlet to provide a succession of compartments, overflow passages in each of said compartments arranged at consecutively decreasing levels to provide a cascading flow of said liquid from said inlet towards said outlet, atomized spray generating nozzle means above each said compartments, adjusting means for adjusting the vertical distance of said nozzle means from the overflow levels of each compartment, means for supplying water under pressure connected to and communicating with each of the nozzle means.

4,338,219

CATALYST COMPOSITIONS USED FOR COPOLYMERIZATION OF ISOMONOOLEFINS WITH CONJUGATED DIENES

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 446,427, Feb. 27, 1974, Pat. No. 4,105,845. This application May 26, 1978, Ser. No. 910,040
Int. Cl.³ C08F *4/26, 4/82, 4/80, 36/06*
U.S. Cl. 252—428 **14 Claims**

1. A catalyst comprising effective ratios of (A) a nickel source complex and (B) a titanium or vanadium compound,

wherein said (A) nickel source complex is represented by $Ni(L)_n$ wherein n is an integer of 1 to 4 inclusive, L represents a ligand, and is phosphoryl, nitrosyl, or mixture, and

wherein said (B) titanium or vanadium compound is represented by TiY_4, VY_4, or VOY_3, wherein Y is acetylacetonate or —OR' wherein R' is a hydrocarbyl radical of 1 to 8 carbon atoms.

2. The catalyst composition according to claim **1** wherein said L is said phosphoryl, said phosphoryl is alkyl or aryl phosphines or alkyl or aryl phosphites wherein the carbon atoms per alkyl or aryl group does not exceed 12.

9. A catalyst comprising effective ratios of (A) a nickel source complex and (B) a titanium or vanadium compound,

wherein said (A) nickel source complex is represented by $Ni(L)_n$ wherein n is an integer of 1 to 4, inclusive, and L represents a ligand selected from the group consisting of hydrocarbyl olefinic, halo-substituted hydrocarbyl olefinic, phosphoryl, and nitrosyl, such that at least one L is nitrosyl and

wherein said (B) titanium or vanadium compound is represented by TiY_4, VY_4, or VOY_3, wherein Y is chlorine, fluorine, bromine, acetylacetonate, or —OR' in which R' is a hydrocarbyl radical of 1 to 8 carbon atoms.

4,338,220

PYROPHOSPHATO TITANATE ADDUCTS

Gerald Sugerman, Allendale, N.J., and Salvatore J. Monte, Staten Island, N.Y., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Division of Ser. No. 70,907, Aug. 29, 1979, Pat. No. 4,277,415. This application Jan. 12, 1981, Ser. No. 224,055

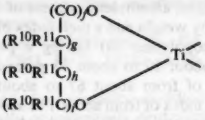
Int. Cl.³ B01J 31/02

U.S. Cl. 252—430 6 Claims

1. A composition comprising an inorganic solid and a titanate having the formula

$$X_c Ti[OP(O)(OR^1)OP(O)(OR^2)(OR^3)]_{4-c}(NR^4R^5R^6)_d[P(OR^7)(OR^8)(OR^9)]_e$$

wherein c is 1 or 2; d is 0, 1 or 2; e is 0, 1 or 2; with the proviso that d plus e must be 1 or 2; with the proviso that if c is 1, X must be RO—; and with the proviso that when c is 2, X is either RO— or a group which taken together with the Ti to which it is attached forms a ring having the formula



wherein each of f, g, h and i is 0 or 1, with the proviso that at least one of g, h and i is 1 and that the sum of f, g, h and i is 2 or 3; and wherein each R is independently selected from C_1 to C_{10} alkyl, C_3 to C_{10} alkenyl, C_7 to C_{10} dioxyalkylene; R^1, R^2, R^4, R^7, each R^{10} and each R^{11} are independently selected from hydrogen, C_6 to C_{10} aryl, C_7 to C_{20} aralkyl, C_1 to C_{20} alkyl, C_3 to C_{20} alkenyl, C_2 to C_{20} oxyalkylene and C_3 to C_{20} oligooxyalkylene, with the proviso that one and only one of R^1 and R^2 is hydrogen; R^5, R^6, R^8 and R^9 are independently selected from the same groups as are R^1, R^2, R^4, R^7, each R^{10} and each R^{11}, except that R^5, R^6, R^8 and R^9 may not be hydrogen, and, in addition, R^5 and R^6 are independently selected from C_1 to C_{10} alkanol, C_2 to C_6 alkandiol, C_7 to C_{10} aralkanol, substituted and unsubstituted C_1 to C_{10} alkyl, substituted and unsubstituted C_3 to C_{10} aralkyl, these last four groups being optionally substituted with 1 to 3 carboxylate groups or from 1 to 3 carboxamide groups, each such carboxylate group and each such carboxamide group being saturated or unsaturated and having from 1 to 5 carbon atoms; with the proviso that when aromatic carbons are present in any one of R, R^2, R^4, R^7, R^{10} or R^{11}, each of said carbons is optionally substituted with 1 or 2 independently selected halogen atoms.

4,338,221

CATALYST FOR THE REDUCTION OF UNSATURATED ORGANIC ACIDS

Gail M. Qualeatti, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 11, 1981, Ser. No. 233,416

Int. Cl.³ B01J 23/06, 23/36, 23/60, 23/64

U.S. Cl. 252—455 R 8 Claims

1. A catalyst composite for the reduction of an unsaturated acid to an unsaturated alcohol or ester which comprises from about 1% to about 10% by weight of cadmium in the oxide form, and from about 0.5% to about 5% by weight of rhenium in an oxide form, both being composited upon a high surface area solid support.

4,338,222

SEMICONDUCTIVE ORGANIC COMPOSITIONS

William W. Limburg, Penfield; Damodar M. Pai, Fairport, and James M. Pearson, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1980, Ser. No. 139,312

Int. Cl.³ A01B 1/00

U.S. Cl. 252—500 15 Claims

1. An electrically conducting composition comprising an organic hole transporting compound selected from the group consisting of of N,N'-diphenyl-N,N'-bis(phenylmethyl)-[1,1'-diphenyl]-4,4'-diamine; N,N'-diphenyl-N,N'-bis-(2-methylphenyl)-[2,2'-dimethyl-1,1'-diphenyl]-4,4'-diamine; N,N,N'N'-tetraphenyl-[2,2'-dimethyl-1,1'-diphenyl]-4,4'-diamine; 1,4-bis[-bis-4'-phenylmethylamino-2'-methylphenyl)methyl] benzene N,N'-diphenyl-N,N'-bis(3-methylphenyl)[p-terphenyl]-4,4"-diamine; 2,5-bis(4' dimethylaminophenyl)-1-ethyl-1,3,4-triazole; 2,5-bis(4'dimethylaminophenyl)-1,3,4-oxidiazole; poly(N-vinylcarbazole) and poly-1-vinylpyrene and the cation radical oxidation reaction product of a selected organic hole transporting compound and an oxidizing agent capable of accepting one electron from the hole transporting compounds, said cation radical oxidation reaction product being present in said composition in an amount sufficient to increase the conductivity of the organic hole transporting compound.

4,338,223

METHOD OF MANUFACTURING A VOLTAGE-NONLINEAR RESISTOR

Yuji Yokomizo; Kiyoshi Minami, both of Nagai; Noboru Ichinose, Yokohama, and Yoshikazu Tanno, Ayase, all of Japan, assignors to Marcon Electronics Co., Ltd., Nagai and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed May 7, 1980, Ser. No. 147,526

Claims priority, application Japan, May 30, 1979, 54/66125; May 30, 1979, 54/66126; May 30, 1979, 54/66127; May 30, 1979, 54/66128

Int. Cl.³ H01B 1/06

U.S. Cl. 252—519 17 Claims

1. A method of manufacturing a voltage-nonlinear resistor comprising:

providing a starting composition comprising 0.01 to 10 mol % of a first additive selected from the group consisting of nickel oxide and its precursor, 0.01 to 10 mol % of a second additive selected from the group consisting of zirconium oxide or its precursor, yttrium oxide or its precursor, hafnium oxide or its precursor, and scandium oxide or its precursor, 0.01 to 10 mol % of metal zinc and the remainder being zinc oxide;

shaping said starting composition to provide a desired molded body;

sintering said starting composition at a temperature of at least about 1,100° C. to form a sintered body having a voltage-nonlinear resistance characteristic; and

providing said sintered body with electrodes on both major surfaces.

4,338,224

WATER PROOFING COMPOSITIONS FOR CEMENT MORTAR OR CONCRETE

Toshihiro Fujii, Fukuyama, and Sekiji Yokota, Hiroshima, both of Japan, assignors to Hayakawa Rubber Co., Ltd., Japan

Continuation of Ser. No. 928,658, Jul. 27, 1978, abandoned, which is a division of Ser. No. 846,051, Oct. 27, 1977, Pat. No. 4,193,831, which is a continuation of Ser. No. 668,114, Mar. 18, 1976, abandoned, which is a continuation of Ser. No. 537,014, Dec. 27, 1974, abandoned. This application Mar. 31, 1981, Ser. No. 249,554

Claims priority, application Japan, Jun. 15, 1974, 49/68453

Int. Cl.³ C08L 17/00

U.S. Cl. 523—177 1 Claim

1. A water-proofing adhesive to be used in contact with wet cement mortar or wet concrete and having a viscosity (Brookfield viscometer) at 25° C. or 100–2,000 cps, which comprises 10–20% by weight of reclaimed butyl rubber, 5–15% by weight of and inorganic filler or blown asphalt, 1–15% by weight of at least one thermoplastic resin selected from the group consisting of terpene polymerized resin, hydrogenated rosin, cumarone resin, xylene resin and polyisobutylene having a molecular weight of 5–300 and a solvent.

4,338,225

HIGH PERFORMANCE RESIN REACTION PRODUCTS OF CARBOXYL TERMINATED 1,2-POLYBUTADIENE WITH EPOXIDES AND ACID TERMINATED DIFUNCTIONAL ALIPHATIC ALCOHOLS

Clyde H. Sheppard, Bellevue, Wash., assignor to The Boeing Company

Filed Aug. 4, 1980, Ser. No. 175,259
Int. Cl.[3] C08F *283/10*; C08G *59/14*
U.S. Cl. 525—122 13 Claims

1. A hard thermoset resin which is a reaction product of:

one mole of 1,2-polybutadiene having more than one carboxyl terminal group;

one mole of the reaction product of two moles of a difunctional aliphatic carboxylic acid or two moles of its anhydride, and one mole of a difunctional aliphatic alcohol;

a minimum of 4 moles of an at least difunctional epoxide selected from the group consisting of epoxy novolacs, epichlorohydrin/bisphenol A-type, bis-epoxydicyclopentyl ether of ethylene glycol, 1-epoxyethyl-3,4-epoxycyclohexane, dicyclopentadiene dioxide, limonene dioxide, bis (2,3-epoxypropoxy) benzene, vinylcyclohexane dioxide, 3,4-epoxy-6-methylcyclohexylmethyl-3,4-epoxy-6-methylcyclohexanecarboxylate, zeaxanthin diepoxide, and 9,10-epoxy-12-hydroxyoctadecanoic acid triester of glycerol;

an epoxide hardener to connect the polymer chains and produce an adequately crosslinked and satisfactorily thermoset resin; and

a peroxide free radical initiator homogeneously dispersed throughout the reaction product.

4,338,226

PROCESS FOR THE STABILIZATION OF POLYVINYL CHLORIDE AND STABILIZER COMPOSITIONS

Kurt Worschech, Loxstedt; Peter Wedl, Loxstedt-Bexhövede; Frido Löffelholz, Bremerhaven; Bernd Wegemund, Haan, and Werner Erwied, Langenfeld, all of Fed. Rep. of Germany, assignors to Neynaber Chemie GmbH, Loxstedt, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,851
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941597; Austria, Jun. 16, 1980, 3168/80
Int. Cl.[3] C08K *5/09*
U.S. Cl. 524—302 26 Claims

1. A process for stabilizing polyvinyl chloride molding mixtures, which comprises admixing

(a) from about 0.2 to 5 parts by weight of a synthetic, crystalline sodium zeolite A of small particle size and containing from about 13 to 25 percent by weight of water of crystallization, which has the composition

$$0.7\text{–}1.1Na_2O.Al_2O_3.1.3\text{–}2.4SiO_2$$

with respect to the anhydrous form;

(b) from about 0.05 to 1.5 parts by weight of one or more calcium salts of fatty acids with from 8 to 22 carbon atoms;

(c) from about 0.05 to 0.5 parts by weight of one or more zinc salts of fatty acids with from 8 to 22 carbon atoms;

(d) from about 0.2 to 2.0 parts by weight of partial esters of polyols with from 2 to 6 carbon atoms and from 2 to 6 hydroxyl groups and fatty acids with from 8 to 22 carbon atoms, which contain an average of at least one free polyol-hydroxyl group per molecule and have an OH-number of from about 140 to 580; and

(e) from about 0.1 to 10 parts by weight of thioglycolic acid esters of polyols with from 2 to 6 hydroxyl groups and/or thioglycolic acid esters of monofunctional alcohols with from 8 to 22 carbon atoms

with 100 parts by weight of polyvinyl chloride or copolymer of vinyl chloride.

4,338,227

ETHYLENE COPOLYMER BLENDS AND ADHESIVES BASED THEREON

Edward C. Ballard, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 184,547, Sep. 5, 1980, abandoned. This application Apr. 24, 1981, Ser. No. 257,112
Int. Cl.[3] C08L *23/08, 23/16, 33/02, 33/04*
U.S. Cl. 524—143 18 Claims

1. A composition consisting essentially of a homogeneous blend of at least one non-crosslinked ethylene copolymer (A) and at least one non-crosslinked ethylene copolymer (B), each copolymer having at least one polar comonomer selected from the group consisting of vinyl esters of saturated carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- or dicarboxylic acids of 3 to 5 carbon atoms, and esters of said unsaturated mono- or dicarboxylic acids wherein the alcohol moiety has 1 to 8 carbon atoms, copolymer (A) having a polar comonomer content of from about 25 to about 50 percent by weight, an ethylene content of from about 50 to about 75 percent by weight and a melt index of from about 3 to about 200, and copolymer (B) having a polar comonomer content of from about 10 to about 33 percent by weight, an ethylene content of from about 67 to about 90 percent by weight and a melt index of from about 1 to about 100, provided that the polar comonomer content of copolymer (A) is at least 5 percent by weight higher than the polar comonomer content of copolymer (B), copolymer(s) (A) being present in an amount of from about 10 to about 90 percent based upon the weight of total copolymer and copolymer(s) (B) being present in an amount of from about 10 to about 90 percent based upon the weight of total copolymer, said homogeneous blend of copolymers (A) and (B) having been mildly cross-linked to reduce the melt index of said blend by a factor of from about 2 to about 150.

4,338,228

POLYOLEFIN COMPOSITION CONTAINING (A) FILLER (B) NUCLEATING AGENT AND (C) HEAT DETERIORATION INHIBITOR

Hiroshi Inoue, Ooi; Masaaki Isoi, Ogose; Makoto Yoda, Kawagoe, and Masato Komatsu, Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,732
Claims priority, application Japan, Oct. 12, 1979, 54-130836
Int. Cl.[3] C08L *91/00*; C08K *3/40, 5/09, 5/49*
U.S. Cl. 524—120 9 Claims

1. A polyolefin composition comprising:

(a) a modified polyolefin obtained by adding an unsaturated carboxylic acid or anhydride thereof to a polyolefin, or a mixture of said modified polyolefin and an unmodified polyolefin;

(b) an inorganic filler;

(c) at least one nucleating agent which is a metal salt of aliphatic carboxylic acid, aliphatic dicarboxylic acids, aromatic carboxylic acids, aromatic dicarboxylic acids or alkyl-substituted derivatives thereof, or dibenzylidenesorbitol; and

(d) and at least one heat deterioration inhibitor.

4,338,229

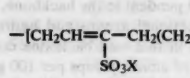
HOT MELT ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield, N.J., and Henry S. Makowski, deceased, late of Scotch Plains, N.J. (by Patricia Helen Makowski, executrix), assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 14, 1980, Ser. No. 196,211
Int. Cl.[3] C08L *95/00*
U.S. Cl. 524—399 11 Claims

1. A hot melt adhesive composition which comprises:

(a) a neutralized sulfonated elastomeric polymer having the formula



wherein n=2, 3, 4, 5 or 6, wherein X is a counterion, said neutralized sulfonated elastomeric polymer having about 5 to about 100 meq. of neutralized sulfonated groups per 100 grams of said neutralized sulfonated elastomeric polymer; and

(b) about 25 to about 200 parts by weight of a hydrocarbon tackifying resin based on a petroleum or coal tar distillate per 100 parts by weight of said neutralized sulfonated elastomeric polymer.

4,338,230

EMULSIFIABLE POLYOLEFIN WAXES PREPARED BY REACTING PIVALOLACTONE AND A POLYOLEFIN WAX CONTAINING CARBOXYL GROUPS

William A. Ames, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,272

Int. Cl.[3] **C08L** *23/26, 23/30, 23/36, 91/06*

U.S. Cl. 549—263 **20 Claims**

1. An emulsifiable low viscosity modified polyolefin wax prepared by partially or completely neutralizing a low viscosity carboxyl group containing polyolefin wax having a melt viscosity of 50 to 3,000 centipoise at 150° C. and an acid number of at least 14 with at least one tetra lower alkyl ammonium hydroxide thereby converting carboxyl group of said polyolefin wax to carboxylate anions, and reacting the partially or completely neutralized modified polyolefin wax with pivalolactone in an amount of from about 5 to about 40 percent based on the weight of the low viscosity carboxyl group containing polyolefin wax to provide modified polyolefin wax having good emulsifiability and higher softening point.

4,338,231

MODIFIED ASPHALT COMPOSITIONS

Alfred Marzocchi, Newark; Charles E. Bolen, Heath; Edward R. Harrington, Newark, and Michael G. Roberts, Heath, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 158,966, Jun. 12, 1980. This application Oct. 27, 1980, Ser. No. 200,724

Int. Cl.[3] **C08L** *95/00*

U.S. Cl. 523—214 **15 Claims**

1. An asphalt-polyester composition comprising the reaction product of (1) a polyester resin prepared by reaction of an unsaturated polycarboxylic acid or anhydride and an organic polyalcohol, (2) a polymerizable vinyl monomer, and (3) a chemically-modified asphalt, said chemically-modified asphalt having been prepared by reaction of an asphalt, a polyester-forming polycarboxylic acid or anhydride and a polyester-forming organic polyalcohol.

4,338,232

RADIATION-CURABLE RESINS

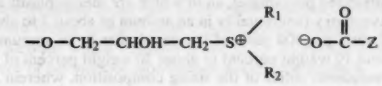
Robert F. Harris; Dwight K. Hoffman, both of Midland, Mich., and Richard A. Hickner, Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 864,421, Dec. 27, 1977, abandoned. This application Apr. 7, 1980, Ser. No. 137,706

Int. Cl.[3] **C08L** *63/02, 63/04, 63/10*

U.S. Cl. 523—414 **11 Claims**

1. A sulfonium-stabilized, water-compatible, radiation curable, water-in-oil emulsion of a resinous composition comprising (1) molecules containing ester groups resulting from the esterification of an epoxy compound having an epoxy equivalent weight of up to 500 and an unsaturated monocarboxylic acid having a dissociation constant of at least 1×10^{-7} and (2) molecules containing sufficient sulfonium groups to make said resinous composition water compatible, said molecules being the reaction product of essentially equivalent amounts of a glycidyl ether and an unsaturated acid reacted in the presence of an organic sulfide, said sulfonium groups having the structure:



wherein R_1 and R_2 are hydrocarbyl or inertly substituted hydrocarbyl groups of from 1 to 24 carbon atoms or R_1 and R_2 together with the sulfur form a 5- or 6-membered heterocyclic ring and Z is the noncarboxylic portion of the same unsaturated monocarboxylic acid as in the ester (1) when said ester is the mono- ester of a mono-glycidyl ether and Z is the noncarboxylic portion of a saturated or unsaturated monocarboxylic acid when (1) is a polyester of a polyglycidyl glycidyl ether.

4,338,233

AQUEOUS SIZING COMPOSITION AND SIZED GLASS FIBERS AND METHOD

Balbhadra Das, and L. Dow Moore, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 15, 1981, Ser. No. 273,791

Int. Cl.[3] **C08K** *5/54*

U.S. Cl. 523—410 **23 Claims**

1. An aqueous sizing composition for treating glass fibers to produce sized glass fiber strands for use in reinforcing polymeric materials, comprising:

(a) a major amount of the solids of the sizing composition being one or more cross-linkable film forming polymers compatible with the polymeric matrix to be reinforced with the glass fibers,

(b) one or more organo-silane coupling agents in an amount up to about 20 weight percent of the solids of the sizing composition,

(c) an interaction product of an epoxidized polar thermoplastic copolymer and an unhydrolyzed or partially hydrolyzed amino-containing organo-silane coupling agent in an amount of about 10 weight percent up to about 50 weight percent of the solids of the sizing composition, wherein the interaction product is formed by contacting the epoxidized copolymer which has about 2 to about 12 parts of epoxidized monomer per 100 parts of copolymer and which has a glass transition temperature from about −10° C. to about 70° C. with the amino-containing organo-silane coupling agent wherein the amount of the amino silane coupling agent is in the range of about 0.1 to about 1.2 weight percent of an aqueous mixture having at least 20 weight percent of the epoxidized copolymer, and

(d) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

4,338,234

SIZING COMPOSITION AND SIZED GLASS FIBERS AND STRANDS PRODUCED THEREWITH

L. Dow Moore, and Balbhadra Das, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 4, 1980, Ser. No. 156,460

Int. Cl.[3] **C08K** *5/54*

U.S. Cl. 523—206 **30 Claims**

1. An aqueous sizing composition for treating glass fibers to produce sized glass fiber strands for use in reinforcing polymeric materials, comprising:

(a) a major amount of the solids of the sizing composition being one or more cross-linkable film forming polymers compatible with the polymeric matrix,

(b) one or more organo-silane coupling agents in an amount

up to about 20 weight percent of the solids of the sizing composition,

(c) an epoxidized polar thermoplastic copolymer selected from the group consisting of epoxidized polyvinylacetate, epoxidized polyacrylate, epoxidized polyurethanes, and epoxidized polyamides, all of which are thermoplastic and have epoxy functionality in an amount of about 3 to about 12 parts per 100 parts of the copolymer in an amount of about 10 weight percent to about 50 weight percent of the nonaqueous solids of the sizing composition, wherein the copolymer has a Tg from about ambient temperature to about 70° C.;

(d) urea formaldehyde condensate polymer in an amount in the range of about 2 to about 14 weight percent of the nonaqueous solids in the aqueous sizing compounds; and

(e) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

4,338,235

ELECTROCOATING COMPOSITION WITH POLYHYDROXYAMINE AND ACRYLIC OR METHACRYLIC POLYMERS

Isidor Hazan, Clementon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 106,256, Dec. 21, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,952

Int. Cl.³ C08L *29/00, 39/00*

U.S. Cl. 524—504 **13 Claims**

1. An aqueous cathodic electrodeposition coating composition comprising a dispersion of a first polymer, a second polymer, enough of an organic acid to give the composition a pH about in the range of 6 to 7, and optionally a nitrogen resin crosslinker, said coating composition containing, by weight based on the first and second polymers, about 20–70% of a first polymer which is a copolymer comprising a backbone and a graft pendent to the backbone, said backbone containing amine functional groups and hydroxy functional groups, characterized in that said backbone contains at least about 0.13 equivalent of amine groups per 100 grams of first polymer and at least about 0.03 equivalent of hydroxyl groups per 100 grams of first polymer, and containing, by weight, the equivalent of about:

(a) 35–90% amine functional monomers,

(b) 10–60% hydroxy functional monomers,

(c) 0–40% nonfunctional acrylic or methacrylic monomers, and

(d) 0–5% chain-terminating monomers

the total of (a), (b), (c) and (d) being 100% of said backbone,

said graft comprising a monoglycidyl ester of at least one tertiary carboxylic acid containing 9–20 carbon atoms and being grafted to said amine groups in said backbone, said copolymer containing about 1–30% by weight of said graft, and, by weight based on the first and second polymers, about 80–30% of a second polymer which is acrylic or methacrylic polymer resulting from polymerization with the vinyl unsaturation of acrylic or methacrylic acid ester, said polymer having an acid number of about zero and containing hydroxy functionality.

4,338,236

POLYHYDROXYAMINE DISPERSANT USEFUL IN ELECTRODEPOSITION

Isidor Hazan, Clementon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 106,259, Dec. 21, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,956

Int. Cl.³ C08L *29/00, 39/00*

U.S. Cl. 524—320 **8 Claims**

1. An aqueous cathodic electrodeposition coating composition comprising a dispersion of a copolymer and an organic acid, enough of said acid being present to give the composition a pH about in the range of 6 to 7, said copolymer comprising a backbone and a graft pendent to the backbone, said backbone comprising amine functional groups and hydroxy functional groups, characterized in that said backbone contains at least about 0.13 equivalent of amine groups per 100 grams of backbone and at least about 0.03 equivalent of hydroxyl groups per 100 grams of backbone, and containing, by weight, the equivalent of about:

(a) 35–90% amine functional monomers,

(b) 10–60% hydroxy functional monomers,

(c) 0–40% nonfunctional acrylic or methacrylic monomers, and

(d) 0–5% chain-terminating monomers,

the total of (a), (b), (c) and (d) being 100% of said backbone,

said graft comprising a monoglycidyl ester of at least one tertiary carboxylic acid containing 9–20 carbon atoms and being grafted to said amine groups in said backbone, said copolymer containing about 1–30% by weight of said graft.

4,338,237

PROCESS FOR THE PREPARATION OF AQUEOUS, COLLOIDAL DISPERSIONS OF COPOLYMERS OF THE TETRAFLUOROETHYLENE/ETHYLENE TYPE

Reinhard A. Sulzbach, and Robert Hartwimmer, both of Burghausen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,881

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024450

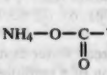
Int. Cl.³ C08K *5/32*

U.S. Cl. 524—777 **4 Claims**

1. A process for preparing a stable, aqueous, colloidal dispersion of a copolymer containing as comonomers in copolymerized form at most 60 mole percent of tetrafluoroethylene, from 60 to 40 mole percent of ethylene, and from 0 to 15 mole percent of at least one additional α-olefinic comonomer copolymerizable with tetrafluoroethylene and ethylene, by copolymerization of said comonomers in an aqueous medium having dissolved therein a fluorinated emulsifying agent and a catalyst selected from the group of acids of manganese, their salts, and manganese compounds capable of being converted into said manganese acids or salts thereof under copolymerization conditions, which comprises copolymerizing in the presence of

(a) a chain transfer agent of the general formula X—CH_2—COOR wherein X is Cl, Br, COOH, COOR, $COCH_3$, CH_3, C_2H_5, or C_3H_7; and R is an alkyl group having from 1 to 4 carbon atoms; or a mixture thereof, and

(b) a dispersion-stabilizing compound of the general formula



wherein Y is $COONH_4$, COOH, CH_3, CH_2OH, CH_2COOH, or CH_2COONH_4, including hydrates and mixtures of said compounds, said dispersion-stabilizing compound being present in an amount of at least 0.001 mole/l aqueous medium.

4,338,238
PROCESS FOR THE PRODUCTION OF POLYCHLOROPRENE LATICES RICH IN SOLID MATTER

Wilfried Nolte, Leverkusen; Wilfried Keller, Dormagen, and Heinz Esser, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,760
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944152
Int. Cl.³ C08L *00/00*
U.S. Cl. 524—706 **2 Claims**

1. A process for polymerising chloroprene which may contain as much as 50% by weight of a copolymerisable monomer; in an alkaline aqueous emulsion, of which the alkali ions at least partially consist of potassium, into a latex rich in solid matter having a solid content of from 50 to 65% by weight in the presence of an alkali salt of disproportionated abietic acid and a formaldehyde condensate with naphthalene sulphonic acid and also an alkali hydroxide, whereby polymerisation is carried out until there is a conversion of more than 90% characterised in that

(a) the aqueous phase contains from 2.8 to 3.8 parts by weight of an alkali salt of disproportionated abietic acid, from 0.3 to 2.0 parts by weight of a formaldehyde condensate of a naphthalene sulphonic acid and from 0.25 to 0.75 parts by weight of an alkali phosphate and/or polyphosphate, based on 100 parts by weight of monomer, and

(b) polymerisation is initiated with an initiator consisting of formamidine sulphinic acid.

4,338,239
POLYACRYLATE THICKENING AGENTS

Laurence G. Dammann, Crestwood, Ky., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 196,009, Oct. 10, 1980, abandoned. This application Mar. 30, 1981, Ser. No. 248,164
Int. Cl.³ C08F *220/06*; C08L *33/02*
U.S. Cl. 524—549 **17 Claims**

1. An interpolymer of monomers comprising (1) at least 60 weight percent of acrylic acid or methacrylic acid; (2) between about 0.2–20 weight percent of a glyceryl ether derivative in which one hydroxyl group is in the free form, one hydroxyl group is in the form of an allyl ether substituent, and the other hydroxyl group is in the form of an ether or ester substituent, wherein said glyceryl ether derivative is prepared by reacting allyl glycidyl ether with a monohydric alcohol or a monocarboxylic acid in the mole ratio of allyl glycidyl ether to alcohol or acid of 1:1 to 1:0.5 and wherein the monohydric alcohol is an alkyl alcohol which contains from one to 20 carbon atoms, an arylalkyl alcohol which contains from 7 to 20 carbon atoms, or an alkenyl alcohol which contains from 12 to 20 carbon atoms, or glycol or polyglycol monoethers having the formula

$$RO(C_2H_4O)_nH$$

wherein R is an alkyl group which contains from 1 to 10 carbon atoms or an aryl group which is phenyl or alkyl substituted phenyl wherein the alkyl group contains from 1 to 12 carbon atoms and wherein n has a value of 1 to about 40, and wherein the monocarboxylic acid is an alkyl monocarboxylic acid which contains from 2 to 20 carbon atoms, an aryl monocarboxylic acid which contains 7 to 20 carbon atoms, or an alkenyl monocarboxylic acid which contains from 5 to 20 carbon atoms; and (3) between about 0–20 weight percent of another olefinically unsaturated monomer copolymerizable therewith.

13. A thickened liquid composition which contains an effective quantity of a thickening agent which is an interpolymer of monomers comprising (1) at least 60 weight percent of acrylic acid or methacrylic acid; (2) between about 0.2–20 weight percent of a glyceryl ether derivative in which one hydroxyl group is in the free form, one hydroxyl group is in the form of an allyl ether substituent, and the other hydroxyl group is in the form of an ether or ester substituent wherein said glyceryl ether derivative is prepared by reacting allyl glycidyl ether with a monohydric alcohol or a monocarboxylic acid in the mole ratio of allyl glycidyl ether to alcohol or acid of 1:1 to 1:0.5 and wherein the monohydric alcohol is an alkyl alcohol which contains from one to 20 carbon atoms, an arylalkyl alcohol which contains from 7 to 20 carbon atoms, or an alkenyl alcohol which contains from 12 to 20 carbon atoms, or glycol or polyglycol monoethers having the formula

$$RO(C_2H_4O)_nH$$

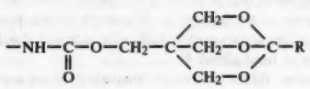
wherein R is an alkyl group which contains from 1 to 10 carbon atoms or an aryl group which is phenyl or alkyl substituted phenyl wherein the alkyl group contains from 1 to 12 carbon atoms and wherein n has a value of 1 to about 40, and wherein the monocarboxylic acid is an alkyl monocarboxylic acid which contains from 2 to 20 carbon atoms, an aryl monocarboxylic acid which contains 7 to 20 carbon atoms, or an alkenyl monocarboxylic acid which contains from 5 to 20 carbon atoms; and (3) between about 0–20 weight percent of another olefinically unsaturated monomer.

4,338,240
CURABLE MATERIAL AND PROCESS FOR PRODUCTION THEREOF

Kiyokazu Mizutani, Inazawa, and Takahisa Ogasawara, Tohkai, both of Japan, assignors to Toagoesi Chemical Industry Co., Ltd., Tokyo, Japan

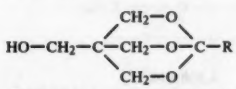
Filed Jun. 23, 1981, Ser. No. 276,488
Claims priority, application Japan, Jul. 16, 1980, 55/96175
Int. Cl.³ C08G *18/30*
U.S. Cl. 524—284 **8 Claims**

1. A curable material comprising urethanes having as the terminal group and/or as the side-chain group at least one urethane group containing a bicyclic ortho-ester ring and represented by the formula



[I]

wherein R is a lower alkyl group, the urethanes being the reaction product formed by reacting (A) at least one polyisocyanate compound having at least two isocyanate groups, (B) at least one polyhydroxy compound having at least two hydroxyl groups and (C) at least one 1-alkyl-4-hydroxymethyl-2,6,7-trioxabicyclo[2,2,2]octane of the formula



[II]

wherein R is as defined above.

4,338,241
SYNTHETIC RESIN COMPOSITION

Hideo Ito; Issei Ueda, both of Onomichi; Yasuo Morinibu, Hiroshima, and Michitomo Takeyasu, Fukuyama, all of Japan, assignors to Onomichi Kumika K.K., Hiroshima, Japan

Filed Sep. 6, 1979, Ser. No. 73,141
Claims priority, application Japan, Jul. 4, 1979, 54-085313
Int. Cl.³ C08L *75/04*
U.S. Cl. 523—200 **15 Claims**

1. A synthetic resin composition which comprises a urethane resin and a filler, wherein each particle in said filler is prepared by layering an outer coat of a fine clay mineral on an inner core of a blowable mineral, and sintering the resulting particle.

4,338,242

URETHANE MODIFIED POLYMERS HAVING HYDROXYL GROUPS

Bruce L. Burton, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 19, 1980, Ser. No. 188,810
Int. Cl.[3] C08L 63/10
U.S. Cl. 523—436 7 Claims

1. A curable reaction product of a vinyl ester resin having secondary hydroxyl groups and from 0.05 to 1 equivalent based on said secondary hydroxyls of isocyanatoethyl methacrylate.

4,338,243

POLYETHYLENE TEREPHTHALATE BLENDS

James L. Hecht, and Paul C. Yates, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1980, Ser. No. 148,183
Int. Cl.[3] C08L 67/02
U.S. Cl. 524—287 13 Claims

1. A molding blend consisting essentially of

(a) 20–90% by weight of blend of polyethylene terephthalate having an inherent viscosity of at least 0.4,

(b) 0–50% by weight of blend of a reinforcing or filling material,

(c) 1–12% by weight of blend of a sodium or potassium salt of a hydrocarbon carboxylic acid of 9–25 carbon atoms or a sodium or potassium salt of an ionic hydrocarbon copolymer of an α-olefin of 2–5 carbon atoms and an α,β-ethylenically unsaturated carboxylic acid of 3–5 carbon atoms in which the carboxyl groups have been at least partially neutralized with Na^+ or K^+ cations, provided the amount of copolymer present is sufficient to provide a $\Delta H_H/\Delta H_c$ ratio of less than 0.25 to the blend,

(d) 1–12% by weight of blend of a low molecular weight organic compound that is an ester, ketone, sulfone, sulfoxide, nitrile or amide of no more than 30 carbon atoms, provided the amount of the compound is sufficient to lower the Tpk of the blend by at least about 4° C.,

(e) a halogenated flame-retardant consisting of an aromatic organic compound having at least one aromatic ring in which the compound has sufficient halogen bonded directly to the aromatic ring carbons to provide flame-retardant properties, said flame-retardant present in said blend in an amount sufficient to provide an amount of halogen to the blend of between about 2 and 20% by weight based on weight of blend,

(f) 0.5–10% by weight of blend of an antimonate of a metal of Groups I, II or VIII of the Periodic Table.

4,338,244

BENZOFURAN(2)ONE OR INDOLIN(2)ONE COMPOUNDS USEFUL AS STABILIZERS FOR ORGANIC MATERIALS

Hans Hinsken, Kandern, Fed. Rep. of Germany; Horst Mayerhoefer, Oberwil; Wolfgang Mueller, Allschwil, both of Switzerland, and Hermann Schneider, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 4, 1980, Ser. No. 118,011
Claims priority, application Switzerland, Feb. 5, 1979, 1104/79; Sep. 28, 1979, 8793/79
Int. Cl.[3] C08K 5/15, 5/34
U.S. Cl. 524—109 24 Claims

1. A process for stabilising organic polymeric materials comprising incorporating therein a benzofuran(2)one compound or indolin(2)one compound containing at least two benzofuran(2)one or indolin(2)one nuclei.

4,338,245

INTUMESCENT FLAME RETARDANT THERMOPLASTIC POLYESTER COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 12, 1981, Ser. No. 292,118
Int. Cl.[3] C08K 3/32; C08J 9/00
U.S. Cl. 524—100 6 Claims

1. Thermoplastic saturated aromatic polyester compositions comprising (a) thermoplastic polyester, (b) a flame retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and (c) a polyol.

4,338,246

INTUMESCENT FLAME RETARDANT THERMOPLASTIC POLYMETHACRYLATE COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 21, 1981, Ser. No. 295,163
Int. Cl.[3] C08K 3/32; C08J 9/00
U.S. Cl. 524—100 6 Claims

1. Thermoplastic polymethacrylate compositions comprising (a) thermoplastic polymethacrylate, (b) a flame retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and (c) a polyol.

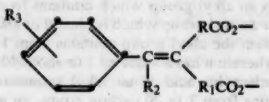
4,338,247

POLYESTER COMPOSITIONS HAVING IMPROVED RESISTANCE TO RADIATION DETERIORATION

Joseph S. Zannucci, and Bobby J. Sublett, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,047
Int. Cl.[3] C08K 9/00; C08G 63/76
U.S. Cl. 528—307 4 Claims

1. A copolyester having an inherent viscosity of at least 0.4 and containing in copolymerized form from about 0.3 to about 5.0% by weight of one or more of the stabilizing moieties having the general formula



where R and R_1 are each a chemical bond or an alkylene group of 1–6 carbons; R_2 is alkyl, cycloalkyl, or aryl; R_3 represents 1–5 groups each independently selected from H, Cl, F, alkyl, cycloalkyl, alkoxy, aryl or aryloxy; wherein all of the above alkyl and alkylene moieties comprising or being part of the R_2 or R_3 groups contain from 1–8 carbons, and wherein all of the above alkyl, alkylene, aryl and cycloalkyl moieties may be substituted with up to three substituents selected from halogen, alkyl of 1–8 carbons, alkoxy of 1–8 carbons, aryl, cycloalkyl and CN.

4,338,248

2-OXOPROPIONALDEHYDE BIS(THIOSEMICARBAZONE) PROTEIN DERIVATIVES, AND THEIR PRODUCTION AND USE

Akira Yokoyama, Otsu, and Yasushi Arano, Mie, both of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

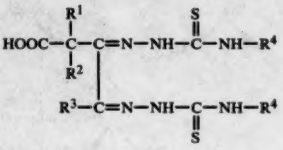
Division of Ser. No. 113,341, Jan. 18, 1980, Pat. No. 4,287,362. This application Aug. 14, 1980, Ser. No. 177,947

Claims priority, application Japan, Aug. 29, 1979, 54-110821; Aug. 29, 1979, 54-110822

Int. Cl.³ C07G 7/00, 7/04

U.S. Cl. 260—112 R **12 Claims**

1. A protein-combined compound comprising: a bifunctional chelating compound of the formula:



wherein R^1, R^2, R^3 and R^4 are each a hydrogen atom or a C_1–C_3 alkyl group and a protein bound therewith by a peptide bond.

4,338,249

CYCLOPENTA[B]FURAN-2-ONE AND -2-OL INTERMEDIATES FOR 16-FLUORO-13,14-DIDEHYDRO-PROSTAGLANDINS

Renato Pellegata, and Carmelo Gandolfi, both of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

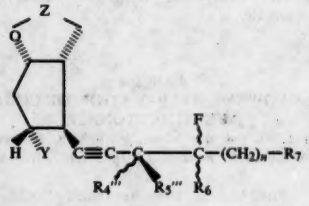
Division of Ser. No. 944,614, Sep. 21, 1978, which is a continuation of Ser. No. 779,632, Mar. 21, 1977, abandoned, which is a division of Ser. No. 667,261, Mar. 15, 1976, abandoned. This application Apr. 7, 1980, Ser. No. 137,233

Claims priority, application Italy, Mar. 21, 1975, 21493 A/75

Int. Cl.³ C07D 307/935

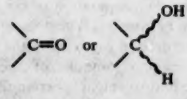
U.S. Cl. 549—214 **1 Claim**

1. A compound of the formula

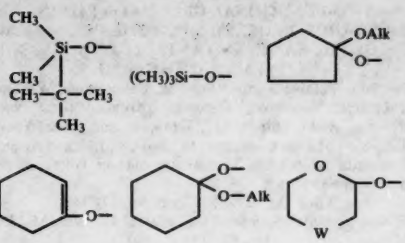


wherein

Z is



one of R_4''' and R_5''' is hydrogen and the other is hydroxy or a known protecting group bound to the chain by an ethereal oxygen atom selected from



in which

W is —O— or $—CH_2$ and Alk is a lower alkyl group or, when Z is $>C=O$, R_4''' and R_5''' taken together, may also be an oxo group;

Y is hydroxy or said protecting group bound to the ring by an ethereal oxygen atom;

n is zero, or an integer of 1 to 6;

R_6 is hydrogen, methyl or fluorine; and

R_7 is methyl, cycloalkyl containing 3 to 7 ring carbon atoms, phenyl or phenyl substituted by at least one substituent selected from halogen, C_1–C_6 alkoxy and trihalomethyl.

4,338,250

1-HYDROXYLATION PROCESS

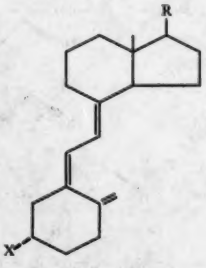
Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis.; David E. Hamer, Hyattsville, Md., and Herbert E. Paaren, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 27, 1981, Ser. No. 258,125

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.2 **21 Claims**

1. A process for preparing 1α-hydroxy-5,6-trans-vitamin D compounds which comprises, treating a 5,6-cis-vitamin D compound having the formula



wherein X is selected from the group consisting of hydrogen, hydroxy and protected-hydroxy, and R is any side-chain substituent desired in the 1α-hydroxy-5,6-trans-vitamin D product,

with iodine and a mixture of SeO_2 and a hydroperoxide in the presence of organic nitrogenous base, and recovering the desired 1α-hydroxy-5,6-trans-vitamin D product.

4,338,251
TWO-FUNCTIONAL-GROUP-CONTAINING TERPENOIDS, PROCESSES FOR THE PREPARATION OF THE SAME, AND ANTI-ULCER AGENTS CONTAINING THE SAME

Akio Sato, Yatabe; Kenji Nakajima, Sakuramura; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Niiza; Noriaki Kuwana, Aichi; Shinya Abe, Kawagoe, and Kouzi Yamada, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and Agency of Industrial Science and Technology, both of Tokyo, Japan, a part interest to each

Filed Dec. 29, 1980, Ser. No. 221,163

Claims priority, application Japan, Jan. 12, 1980, 55-2395

Int. Cl.³ C09E *5/00*

U.S. Cl. 260—405.5 **4 Claims**

1. The compound 12-hydroxy-2,6,10-trimethyl-2,6,10-dodecatrienoic acid

4. The compound 24-hydroxy-2,6,10,14,18,22-hexamethyl-2,6,10,14,18,22-tetracosahexaenoic acid.

4,338,252
1-DESCARBOXY-1-KETOESTER (KETOACID)-PROSTAGLANDINS

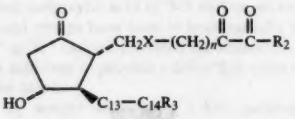
Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 79,626, Sep. 27, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,370

Int. Cl.³ C07C *177/00*

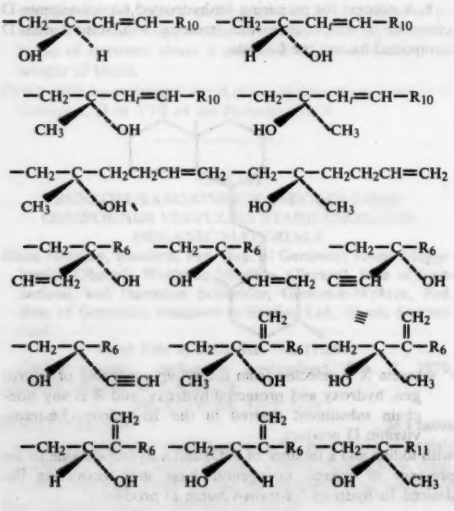
U.S. Cl. 260—408 **144 Claims**

1. An optically active compound of the formula



wherein

R_2 is selected from the group hydroxy and C_1 to C_7 alkoxy; X is selected from the group cis or trans —CH=CH—; C_{13}–C_{14} is the substituent trans —CH=CH—; n is the integer 2, 3 or 4; and R_3 is selected from the group consisting of:



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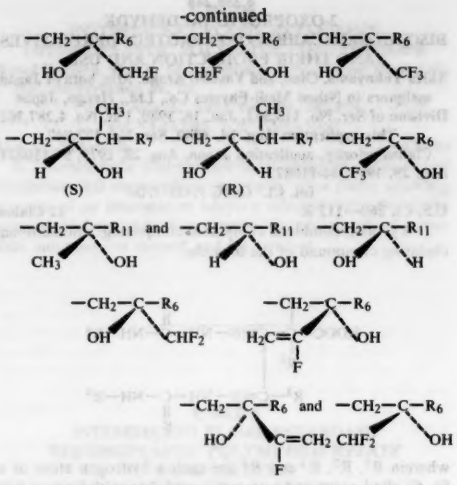


wherein R_6 is C_3 to C_5 alkyl, R_7 is C_2 to C_4 alkyl, R_{10} is C_1 to C_4 alkyl and R_{11} is C_3 to C_7 alkyl, the racemic mixtures thereof, the mirror images thereof and where R_2 is hydroxy, the pharmaceutically acceptable salts thereof.

4,338,253
FLUORINATED AROMATIC POLYENES

Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Monclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 206,197, Nov. 12, 1980, which is a division of Ser. No. 96,362, Nov. 21, 1979, Pat. No. 4,266,073, which is a division of Ser. No. 37,798, May 10, 1979, Pat. No. 4,201,727, which is a division of Ser. No. 952,416, Oct. 18, 1978, Pat. No. 4,169,100, which is a division of Ser. No. 809,738, Jun. 24, 1977, Pat. No. 4,137,246, which is a continuation-in-part of Ser. No. 722,939, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,028, Nov. 14, 1975, abandoned. This application Jun. 25, 1981, Ser. No. 277,569

Int. Cl.³ C07C *59/00*; C09F *7/06*

U.S. Cl. 260—408 **11 Claims**

1. Ethyl-3-[4-methoxy-2,3,6-trimethylphenyl]-2-fluoro-2(Z,E)-propenoate.

4,338,254
PROCESS FOR THE PREPARATION OF COBALT (III) ACETYLACETONATE

Hendrikus J. H. van der Maas, Zuilichem, Netherlands, assignor to Chemische Fabriek Zaltbommel, Zaltbommel, Netherlands

Filed Oct. 16, 1980, Ser. No. 197,462

Claims priority, application Netherlands, Oct. 19, 1979, 7907742

Int. Cl.³ C07F *15/06*

U.S. Cl. 260—439 R **12 Claims**

1. In a process for the preparation of cobalt (III) acetylacetonate by oxidation of cobalt (II) acetylacetonate by contacting the same with hydrogen peroxide in the presence of a the stoichiometrically required amount of acetylacetone in an organic solvent, the improvement wherein the organic solvent used is a solvent that is miscible with water and is inert to hydrogen peroxide, and in which the cobalt (II) acetylacetonate was prepared and is present in solution and carrying out the process at a temperature between 40° and 110° C.

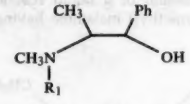
4,338,255

MODIFIED LITHIUM ALUMINUM HYDRIDES

Shiro Terashima; Norihiko Tanno, and Kenji Koga, all of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 25, 1981, Ser. No. 238,136
Claims priority, application Japan, Mar. 4, 1980, 55-27673; Jul. 18, 1980, 55-98956
Int. Cl.³ C07F 5/06
U.S. Cl. 260—448 AD 9 Claims

1. A novel modified lithium aluminum hydride type reducing agent obtained by reacting one equivalent of lithium aluminum hydride with one equivalent of an optically active N-substituted ephedrine of the formula,



(wherein R_1 is a C_1–C_4 alkyl or benzyl group and Ph is phenyl group)
and two equivalents of an N-substituted aniline of the formula,

(wherein R_2 is a C_1–C_4 straight-chain alkyl or phenyl group and Ph is phenyl group).

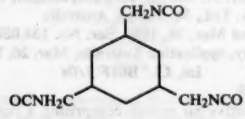
4,338,256

TRIISOCYANATES

Kimiya Fujinami, Takarazuka; Ichiro Minato, Kobe, and Koichi Shibata, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 29, 1980, Ser. No. 154,135
Claims priority, application Japan, May 29, 1979, 54-67171
Int. Cl.³ C07C 119/045
U.S. Cl. 260—453 A 1 Claim

1. A compound of the formula:



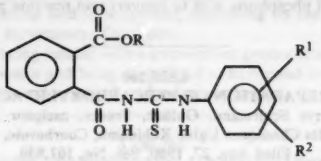
4,338,257

BENZOYL ARYLTHIOUREAS AND USE AS PLANT GROWTH REGULATORS

Natu R. Patel, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 121,542, Mar. 4, 1980, abandoned. This application Feb. 26, 1981, Ser. No. 238,338
Int. Cl.³ C07C 161/02, 161/04, 149/40
U.S. Cl. 260—454 38 Claims

1. The compound having the structural formula:



in which R is H or an agriculturally acceptable salt thereof, or C_1 to C_4 alkyl and R^1 and R^2 are hydrogen or C_1 to C_4 alkyl, alkoxy or carbalkoxy, halogen, thiocyano, hydroxy, phenoxy, or methylthio.

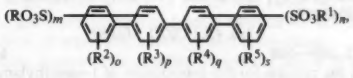
4,338,258

FLUORESCENT DYESTUFFS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS LASER DYESTUFFS

Wolfgang Brinkwerth, Berg.-Gladbach; Wolfgang Hüffer, Cologne; Roderich Raue, Leverkusen; Rudolf Schieder, Huerth, all of Fed. Rep. of Germany, and Helmut Telle, Toronto, Canada, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,695
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938132
Int. Cl.³ C07C 143/68, 143/40, 143/525, 143/52
U.S. Cl. 260—456 A 6 Claims

1. Fluorescent dyestuffs of the general formula



wherein
R and R^1 independently of one another represent hydrogen, a salt-forming cation, an alkyl radical with 1 to 16 C atoms or an aryl or aralkyl radical which is optionally substituted by non-chromophoric groups,
R^2 to R^5 independnetly of one another represent hydrogen, alkyl, trifluoromethyl, alkoxy, aralkoxy, alkenoxy, aryloxy, halogen or a carboxyl, cyano, alkyl sulphone, aryl sulphone, aralkyl sulphone, carboxamide, sulphonamide or carboxylic acid ester group,
o, p, q and s independently of one another represent 1 or 2 and
m and n independently of one another denote 0, 1 or 2, the sum of m and n being 2 to 4.

4,338,259

ALPHA-HALOGENO-BETA-AMINOPROPIONITRILES OR THE MINERAL ACID SALTS THEREOF, AND PROCESSES FOR PRODUCTION THEREOF

Ryuichi Mita, Kawasaki; Akihiro Yamaguchi, Kamakura; Toshio Kato, Kawasaki; Chojiro Higuchi, Kamakura, and Hisamichi Murakami, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,715
Claims priority, application Japan, Aug. 3, 1979, 54/98633; Aug. 10, 1979, 54/101184; Aug. 14, 1979, 54/102735
Int. Cl.³ C07C 121/43, 120/00
U.S. Cl. 260—465.5 R 15 Claims

1. A process for producing a mineral acid salt of alpha-halogeno-beta-aminopropionitrile comprising reacting alpha,-beta-dihalogenopropionitrile with at least two moles of ammonia per mole of alpha,beta-dihalogenopropionitrile in water, in an organic solvent, or in a mixture of water and an organic solvent at a temperature of −40° C. to +30° C., and then reacting the reaction product with a mineral acid selected from

the group consisting of hydrochloric acid, sulfuric acid, nitric acid, and phosphoric acid to convert said reaction product to said salt.

4,338,260

PREPARATION OF PERCARBOXYLIC ACIDS

Jean-Pierre Schirmann, Oullins, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Aug. 27, 1980, Ser. No. 181,830
Claims priority, application France, Sep. 7, 1979, 79 22398
Int. Cl.³ C07C 179/10
U.S. Cl. 260—502 R 9 Claims

1. A process for the preparation of percarboxylic acid which comprises reacting hydrogen peroxide and a water miscible aliphatic carboxylic acid between about 40° C. and 100° C. and at a pressure between about 20 and 100 mm of mercury in the presence of a catalytic amount of orthoboric or metaboric acid and a solvent capable of forming a heteroazeotrope with the water, and continuously eliminating the water which may have been introduced with the hydrogen peroxide as well as the water formed during the reaction by azeotropic distillation.

4,338,261

PROCESS FOR THE PREPARATION OF 1-NAPHTHYLAMINE-4,6-DISULPHONIC ACID AND 1-NAPHTHYLAMINE-2,4,6-TRISULPHONIC ACID

Heinz U. Blank, Odenthal; Horst Behre, Odenthal-Eikamp; Hans W. Linden, Leverkusen, and Werner Mentzel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,416
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013275
Int. Cl.³ C07C 143/60
U.S. Cl. 260—508 6 Claims

1. In the process for the preparation of 1-naphthylamine-4,6-disulphonic acid by sulphonating 1-naphthylamine-6-sulphonic acid with oleum, working up the sulphonation mixture by introducing it into water, and isolating the 1-naphthylamine-4,6-disulphonic acid, the improvement comprising

(a) adding the oleum at a temperature of 10° to 70° C., either simultaneously with the 1-naphthylamine-6-sulphonic acid to initially introduced sulphuric acid, or to 1-naphthylamine-6-sulphonic acid, which is dissolved or suspended in sulphuric acid, and

(b) using such a molar ratio of sulphur trioxide to 1-naphthylamine-6-sulphonic acid that 1.2 to 3 mols of sulphur trioxide are present per mol of 1-naphthylamine-6-sulphonic acid.

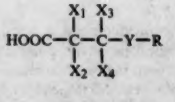
4,338,262

CARBOXYLIC ACID DERIVATIVES

Otto Schallner; Siegfried Oeckl, both of Cologne, and Karl H. Schündehütte, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 21, 1980, Ser. No. 180,275
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935682
Int. Cl.³ C07C 147/02, 147/06
U.S. Cl. 260—544 S 5 Claims

1. An acid halide or anhydride of an acid of the formula:



wherein

X_1 to X_4 is independently hydrogen or halogen, at least one of these radicals being a halogen radical,

Y equals SO_2, and

R equals C_1–C_4 alkyl or phenyl.

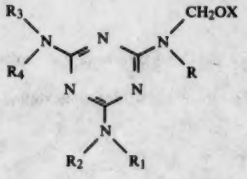
4,338,263

TIRE CORD ADHESIVES

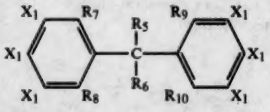
Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 36,112, May 4, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,187
Int. Cl.³ C08K 3/36; C08L 7/00, 61/06
U.S. Cl. 260—762 2 Claims

1. In a vulcanizable rubber composition comprising rubber and a silica filler, the improvement which is characterized by incorporating into the rubber composition an effective adhesion promoting amount of a liquid reaction product of an N-(substituted oxymethyl) melamine having the general formula:



and a bisphenol of the formula:



wherein X is hydrogen or lower (C_1–C_8) alkyl; R, R_1, R_2, R_3 and R_4 are individually hydrogen, lower (C_1–C_8) alkyl or the group $—CH_2OX$, X being as defined hereinabove, one X_1 per phenyl group is hydroxyl and the remaining are hydrogen, R_5 and R_6 are hydrogen or a lower alkyl having one to three carbon atoms, and R_7, R_8, R_9 and R_{10} are hydrogen or a lower (C_1–C_8) alkyl group.

4,338,264

WATER DISTRIBUTION MEANS FOR AN EVAPORATIVE AIR COOLER

Frederic F. Seeley, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty. Ltd., St. Marys, Australia

Filed Mar. 26, 1980, Ser. No. 134,058
Claims priority, application Australia, Mar. 26, 1979, PD8219
Int. Cl.³ B01F 3/04
U.S. Cl. 261—29 8 Claims

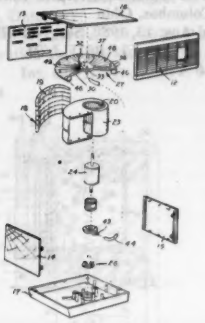
1. An evaporative air cooler comprising a cooler body including a top panel and side panels, a cooler pad assembly adjacent at least one of the side panels, a blower which, in use, draws air through said cooler pad assembly, a pump which, in use delivers water to said cooler pad assembly, a motor to operate said blower and said pump,

water distribution means comprising a tray-like water distributing member supported with respect to said cooler body adjacent the underside of said top panel and having upstanding ribs defining a plurality of outwardly extending water flow channels, and a wall defining a water receiving area, said water flow channels radiating outwardly away from and sloping downwardly away from said water receiving area and being in water flow communication therewith so that water, when the cooler is in use, flows from said area into the channels and outwardly therealong,

a water inlet to said water receiving area, said water inlet

being connected to a water delivery line leading from the outlet side of said pump,

the relative locations of said tray-like water distributing



member and said cooler pad assembly being such that water issuing from the water flow channels runs downwardly over a peripheral edge of the tray-like member and through said cooler pad assembly.

4,338,265

ALTITUDE COMPENSATION DEVICE

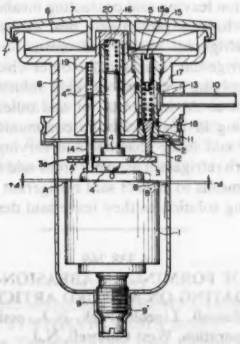
Hisaharu Arai, Nagoya, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

Filed Jul. 17, 1980, Ser. No. 169,700

Claims priority, application Japan, Aug. 8, 1979, 54/109102[U]

Int. Cl.³ F02M *7/24*

U.S. Cl. 261—39 A **7 Claims**



1. In an altitude compensation device comprising a body, a bellows in said body adapted for detecting the altitude, and a plurality of valve mechanisms actuated in accordance with an expansion or contraction of said bellows to adjust compensation air, the improvement comprising

a disc mounted in said body and adapted to be moved up and down maintaining a horizontal disposition,

said disc being mounted on said bellows making a point contact with the center of an upper face of said bellows,

said valve mechanisms each having an operative valve member being engaged at free ends thereof on an upper surface of said disc so that said valve mechanisms are simultaneously operated by the up and down movements of said disc,

each of said valve mechanisms having a valve seat adjustably screwed into said body and a pin acting as a spring retainer, said valve seat being formed with a flow opening, a spring engaging between said pin and said valve member, the latter being displaceably mounted in said flow opening in said valve seat and cooperatively for opening and closing said flow opening depending on the up and down movements of said disc,

said pin being formed with a screwdriver groove at an upper end thereof and being press-fitted to be formed integrally with the valve seat of said valve mechanism.

4,338,266

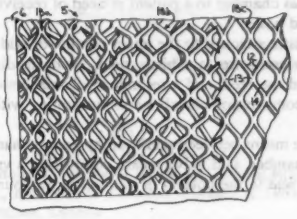
DEVICE FOR CONDITIONING AIR WITH IMPROVED GAS-LIQUID CONTACT PAD

John W. Flower, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Apr. 8, 1981, Ser. No. 251,998

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—94 **7 Claims**



1. For use in conjunction with a device for conditioning air wherein said device has a means for providing air flow therethrough at an operative velocity in excess of about 400 feet per minute, a gas-liquid contact pad being adapted for downward gravity flow of water therethrough and comprising:

(a) a body formed of a plurality of vertical layers of generally flat planular sheets the planes of which are all parallel to each other, and with said layers being slit and planularly expanded to form a multiplicity of inclined baffles and connecting webs forming cell-like openings,

(b) said pad having a plurality of discrete groups of individual layers therein,

(c) all the layers within each discrete group of layers being expanded in the same planular direction so that they are identically oriented,

(d) the baffles in all the layers within each discrete group of layers being oriented to face in the same direction and being generally parallel to each other,

(e) each said group of layers being oriented to face in the opposite direction from its directly adjacent group so that the baffles of one said group face oppositely to the baffles of the next adjacent group.

4,338,267

MEDICAL GAS HUMIDIFIER WITH AUDIBLE PRESSURE RELIEF VALVE AND METHOD OF USE

Arduino E. Riuli, Wayne, N.J.; Robert W. Anastasia, Flushing, N.Y., and Bernard F. Kopacz, Little Falls, N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.

Continuation of Ser. No. 69,037, Aug. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 820,628, Aug. 1, 1977, abandoned. This application Nov. 17, 1980, Ser. No. 207,502

Int. Cl.³ A61M *11/06*

U.S. Cl. 261—121 R **9 Claims**

1. A method of administering a mositurized medical gas to a mammal in need of such therapy, which comprises:

providing apparatus for moisturizing medical gases and which comprises:

(a) a portable housing having an upper portion and a lower portion;

(b) a reservoir chamber within the lower portion of said hous-

ing adapted for holding a column of water and having an upper and a lower zone;

(8c) a gas chamber within the upper portion of said housing and in gas communication with said reservoir chamber;

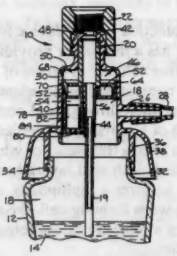
(d) a first passage communicating between the lower zone of said reservoir chamber and the outside of said housing, said passage having a first open end in the lower zone of the reservoir chamber and a second open end on the outside of the housing and adapted for connection to a source of said medical gases whereby medical gases may be introduced into the reservoir chamber and moisturized by contact with water held therein;

(e) a second passage communicating between said gas chamber and the outside of said housing, said second passage having a first open end in said gas chamber and a second open end on the outside of said housing and adapted to connect with a means of delivering moisturized medical gases passed from said gas chamber to a patient in need of receiving said moisturized gases;

(f) a whistle attached to the upper portion of said housing, and which comprises a whistle reed, a nozzle directing gases toward the reed, and a resonating chamber;

(g) a decompression chamber communicating with said nozzle; and

(h) valve means between said decompression chamber and said gas chamber, said valve means comprising a valve casing, a valve seat in the bottom of said casing surrounding a valve



orifice defining an inlet into the valve casing, said valve orifice opening into said gas chamber, a lightweight poppet adapted to seat in said valve seat under the force of gravity of close the valve orifice and to lift out of said valve seat under a predetermined pressure of gas exerted on the seated poppet through the orifice, and a plurality of relatively narrow bypass channels extending longitudinally through said casing and disposed around said poppet which communicate between said decompression chamber and said valve orifice as soon as said poppet is lifted out of said valve seat, said valve means being adapted to rapidly open fluid communication between said decompression chamber and said gas chamber in response to a predetermined gas pressure in said gas chamber, said valve means closing said fluid communication when less than said predetermined gas pressure is in said gas chamber;

disposing water in the reservoir chamber;

connecting the first passage with a source of medical gas, under pressure;

providing a means of administering said gas to the nasal passage of the mammal;

connecting said second passage to said means of administering; and

introducing the medical gas into said first passage;

whereby the medical gas passes through the water and is humidified and thence passes through the second passage, the means for administering and is received by the mammal through the mammal's nasal passages.

4,338,268

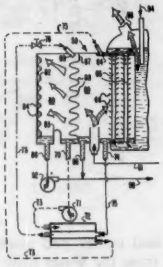
OPEN CYCLE THERMAL BOOSTING SYSTEM

William H. Wilkinson, Columbus, and William T. Hanna, Gahanna, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Aug. 13, 1980, Ser. No. 177,660

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—140 A **13 Claims**



1. Open cycle thermal boosting apparatus comprising, a pressurized housing having an inner chamber and at least one annular outer chamber around said inner chamber; said inner chamber including inlet means for supplying high pressure refrigerant vapor, inlet means for supplying a heat exchange fluid, means for contacting said refrigerant vapor with a first working solution of absorbent and refrigerant to absorb at least a portion of said vapor into solution whereby heat at an elevated temperature level is given off to said heat exchange fluid, said inner chamber including inlet means for said first working solution and outlet means for said heat exchange fluid associated with said contacting means, means for collecting said first working solution leaving said contacting means, the outer wall of said inner chamber providing a heat exchange surface for condensing refrigerant vapor, and means for collecting the condensed refrigerant; said annular outer chamber including means for supplying a second working solution of absorbent and refrigerant to the inner wall of said outer chamber, said inner wall being in heat exchange communication with the outer wall of said inner chamber and serving as a desorber means to desorb refrigerant as vapor from said second working solution, and means to collect said refrigerant vapor and said second working solution as they leave said desorber means.

4,338,269

METHOD OF FORMING AN ABRASION-RESISTANT COATING ON MOLDED ARTICLES

Raymond J. Russell, Lincoln Park, N.J., assignor to Panelgraphic Corporation, West Caldwell, N.J.

Filed Dec. 5, 1980, Ser. No. 213,479

Int. Cl.³ C08F *2/48*

U.S. Cl. 264—22 **9 Claims**

1. A method of forming an abrasion-resistant coating on molded polymeric articles formed by curing a polymerizable monomer-containing molding composition in a mold comprising:

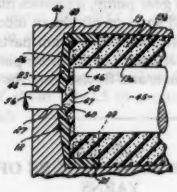
(a) applying to said mold a coating composition curable by actinic radiation comprising a pentaerythritol-based polyacrylate or polymethacrylate and a cellulose ester or a vinyl chloride-vinyl acetate containing copolymer;

(b) exposing said coating composition to actinic radiation to form a cured coating on said mold;

(c) adding to the mold a heat polymerizable monomer-containing molding composition; and

(d) polymerizing said molding composition in the form of a molded article, said cured coating transferring to the surface of said molded article.

4,338,270
METHOD OF FABRICATING A COMPOSITE FOAM HAND HELD IMPLEMENT GRIP
Paul J. Uffindell, Morrow, Ohio, assignor to 'Totes', Incorporated, Loveland, Ohio
Division of Ser. No. 47,221, Jun. 11, 1979, Pat. No. 4,261,567.
This application Oct. 3, 1980, Ser. No. 193,544
Int. Cl.³ B29D 27/00
U.S. Cl. 264—46.4 3 Claims



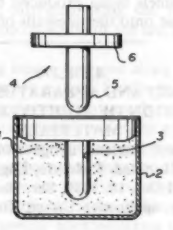
1. A method of fabricating a grip for a hand held implement, said implement including a handle shaft section adapted to receive said grip thereon, said method comprising the steps of
providing a pre-formed rigid cap having an end wall, an outer annular flange, an inner annular flange, and a bore in said end wall coaxially disposed relative to said cap's inner and outer flanges, said annular flanges extending from the same side of said cap's end wall,
positioning said cap in a mold cavity, an inlet port to said mold cavity being aligned with said cap's bore when said cap is located in said mold cavity,
orienting a mandrel in the seat defined by said inner annular flange and said cap's end wall, said cap supporting said mandrel at one end in spaced relation relative to said cavity, and said mandrel being supported at the other end by said mold,
injecting reactants into said mold cavity in liquid form through said cap's bore, said reactants reacting interiorly of said mold cavity to provide a foamed sleeve in structural combination with said pre-foamed cap, said foamed sleeve extending into the annular area of said cap defined by said inner and outer annular flanges, and said cap's outer annular flange and end wall being exposed on the outside surfaces thereof after withdrawal of said grip from said mold.

4,338,271
METHOD FOR MANUFACTURING A LOW DENSITY SYNTHETIC RESIN BODY
Sadao Kumasaka, Tanashi; Satomi Tada, Tokyo; Shigeo Horikoshi; Tokio Tsuchiya, both of Kawagoe, and Masashi Numabe, Saitama, all of Japan, assignors to Toyo Rubber Chemical Industrial Corp., Tokyo, Japan
Filed May 23, 1980, Ser. No. 152,784
Claims priority, application Japan, May 28, 1979, 54-65843; Dec. 24, 1979, 54-167772; Dec. 27, 1979, 54-171406; Dec. 27, 1979, 54-171407; Dec. 27, 1979, 54-171408
Int. Cl.³ B29D 27/00
U.S. Cl. 264—54 14 Claims

1. A method for manufacturing a low density synthetic resin foamed body comprising the steps of forming a mixture of 100 parts by weight of an ethylene-vinyl acetate copolymer, 20–80 parts by weight of a foaming agent, and 1.0–5.0 parts by weight of a crosslinking agent into a sheet, positioning said sheet in a mold, closing the mold with a lid, heating the mold to heat said sheet and to decompose said foaming agent and cross-linking agent to form an integral foamed body from said sheet and forcibly cooling said foamed body as it is kept in the mold with the lid closed, and opening the lid of the mold to remove said cooling integral low density foamed body which has a density

of less than 0.1 and which is expanded to a volumne at least 15 times the volume of said sheet.

4,338,272
SLIP-CASTING SYSTEM
Arthur D. Pelton, St. Laurent, Canada, and Michel Rivier, Palo Alto, Calif., assignors to Canadian Patents & Development Limited, Ottawa, Canada
Filed Jan. 11, 1979, Ser. No. 2,736
Int. Cl.³ B29C 1/02
U.S. Cl. 264—86 4 Claims



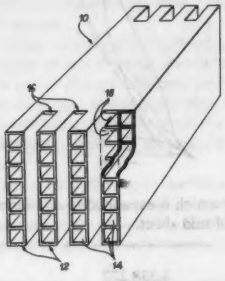
1. A system for slip-casting, comprising:
providing a powder of ceramic material, said powder having a particle size sufficiently small to provide shape retention upon compaction, and to retain suspended particles of a slip, and said powder being inert to the slip;
shaping an compacting the powder to provide a mold cavity that conforms in shape to that of a desired casting;
introducing a slip into said shaped and compacted powder mold cavity, retaining the slip for a time sufficient to form the desired thickness of the casting, and removing the remaining slip;
allowing at least partial drying of the casting; and
separating the casting from the powder.

4,338,273
PROCESS FOR THE PRODUCTION OF ALVEOLAR MODULES
Guy Schnedecker, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Aug. 26, 1980, Ser. No. 181,409
Claims priority, application France, Sep. 6, 1979, 79 22310
Int. Cl.³ B29D 23/04
U.S. Cl. 264—167 7 Claims

1. A process for the production of alveolar modules comprising rows of parallel channels, certain of which issue onto

the sidewalls of the module, wherein it consists of producing the module by extrusion using at least two independent systems, each producing rows of identical channels, whereby the formation of one of the systems is interrupted when the rows of channels being produced is to issue onto the sidewalls of the module.

5. An apparatus for producing alveolar modules having rows of parallel channels, certain of which issue onto the sidewalls of the module, comprising a first extrusion system



incorporating first extrusion material supply means and a first spinneret complementary of the cross-section of the rows of channels issuing onto the sidewalls of the module, a second extrusion system complementary of the cross-section of the other rows of channels, the first and second supply means being controlled independently of one another, and means for interrupting extrusion by one of said extrusion systems when the rows of channels being produced by said one extrusion system are to issue onto the sidewalls of the module.

4,338,274

METHOD AND APPARATUS FOR THE INCORPORATION OF ADDITIVES INTO PLASTICS MATERIALS

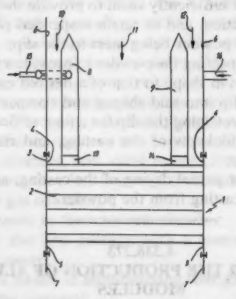
Alan H. Hill, Bury, England, assignor to General Engineering Radcliffe 1979 Limited, Radcliffe, England

Filed Oct. 10, 1980, Ser. No. 195,766

Claims priority, application United Kingdom, Oct. 12, 1979, 7935441

Int. Cl.³ B29F *3/12*

U.S. Cl. 264—171 **15 Claims**



1. A method of incorporating an additive into a stream of homogenised plastics material in a predetermined location or locations and thereafter confining the additive substantially to that location or those locations including the steps of feeding a homogenised plastics material towards a gear pump, dividing the stream into at least two parts and maintaining the division at least until the plastics material enters the teeth of the gear pump, introducing an additive into the plastics material before or at the gear pump and in such a manner that the additive passes through an end region or the end regions of the gears of the gear pump and thereafter re-combining the parts of the stream prior to extrusion through a die to produce a product with at least one localised longitudinally extending modified plastics material region therein.

9. Apparatus for incorporating an additive into a stream of homogenised plastics material in a predetermined location or locations comprising a gear pump, a plastics material supply to the gear pump, formed so as to divide an incoming stream of plastics material into at least two stream parts and means for supplying additive to at least one of those parts such that the additive supplied contacts and flows along the external surface of the part.

4,338,275

PROCESS FOR THE MANUFACTURE OF POLYESTER YARNS

Paul L. I. Carr, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 934,917, Aug. 18, 1978, abandoned. This application Jul. 24, 1980, Ser. No. 171,672

Claims priority, application United Kingdom, Aug. 19, 1977, 34904/77

Int. Cl.³ D01D *1/04*

U.S. Cl. 264—176 F **5 Claims**

1. A draw spinning process for the manufacture of polyester filaments comprising directly extruding molten polyester filaments into a first fluid environment heated to a temperature above the melting point of the filaments and subsequently passing said filaments through a second fluid environment heated to a temperature above the glass transition temperature but below the melting temperature of the filaments, said fluid environments being separate from one another a distance sufficient to cool the filaments below the temperature of the second fluid environment, and withdrawing and winding up the filaments at a speed in excess of 5500 meters/minute.

4,338,276

PROCESS FOR THE MANUFACTURE OF POLYAMIDE YARNS

Paul L. I. Carr, Harrogate, England, assignor to Imperial Chemical Industries, Ltd., London, England

Continuation of Ser. No. 934,916, Aug. 18, 1978, abandoned. This application Jul. 24, 1980, Ser. No. 171,671

Claims priority, application United Kingdom, Aug. 19, 1977, 34906/77

Int. Cl.³ D01D *1/04*

U.S. Cl. 264—176 F **6 Claims**

1. A draw spinning process for the manufacture of filamentary polyamide yarns comprising directly extruding molten polyamide filaments into a first fluid environment heated to a temperature above the melting point of the filaments and subsequently passing said filaments through a second fluid environment heated to a temperature of 80° C. to 250° C., said fluid environment being separated from one another a distance sufficient to cool the filaments below the temperature of the second fluid environment, and withdrawing and winding up said filaments at a speed in excess of 5500 meters/minute.

4,338,277

PROCESS FOR PRODUCING HIGH KNOT STRENGTH POLYAMIDE MONOFILAMENTS

Isoo Saito, Okazaki, and Kotaro Fujioka, Nagoya, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,703

Claims priority, application Japan, Aug. 20, 1979, 54-104963

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—235.6 **17 Claims**

1. In a process for producing a polyamide monofilament having high knot strength, the steps which comprise:

(A) drawing melt spun undrawn polyamide monofilament (M_1) at a ratio of about 3–5.5 to produce a partially oriented monofilament (M_2) having a diameter of about 0.05–2 mm;

(B) subjecting said monofilament (M_2) to saturated steam having a pressure not less than about 1 kg/cm^2.G for about 0.05–5 seconds while relaxing to produce a monofilament (M_3) relaxed to about 0.7–1.0 times the length of said partially oriented monofilament (M_2); and

(C) heating said monofilament (M_3) in the presence of

(a) a gas at about 200°–800° C. and

(b) a liquid at about 150°–265° C., said gas and said liquid being inert to said monofilament (M_3) for about 0.05–5 seconds and drawing said relaxed monofilament (M_3) at a ratio of about 1.2–2.5 to produce a drawn monofilament (M_4).

4,338,278

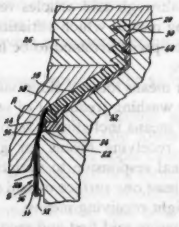
METHOD FOR MAKING A COLLAPSIBLE DISPENSING TUBE HAVING AN ANCHORED BARRIER MEMBER

Robert S. Schultz, 7 Heusted Dr., Old Greenwich, Conn. 06870

Division of Ser. No. 814,323, Jul. 8, 1977, Pat. No. 4,185,757. This application Jan. 21, 1980, Ser. No. 113,608

Int. Cl.^{3} B29D *3/00, 23/08;* B29F *1/00*

U.S. Cl. 264—261 **7 Claims**



1. A method of making a collapsible container having a flexible tubular body and provided with a thermoplastic headpiece comprising: inserting a flexible tube over a tapered mandrel having a conical taper of a certain angle, moving a die having an angled portion corresponding to said taper of said mandrel against said tube to thereby push the same into engagement with the conical taper of said mandrel whereby said top of said tube is bent inwardly and a portion of said tube immediately below said top is further bent into a conical shape having an angle substantially corresponding to the angle of the conical taper of said mandrel, said top portion and top edge of said tube being spaced from said mandrel and therefore not engaged thereby, moving thread plates in a direction toward said tube to engage the neck portion thereof and form threads therein, and forcing a thermoplastic material through a molding gate located in the top area of said assembly to injection mold said headpiece between the mandrel and die to thereby secure said headpiece to said tubular body whereby said thermoplastic material flows into said space between the inner wall of said top portion and the adjacent surfaces of said mandrel to firmly adhere the top wall of said tubular body to said headpiece.

4,338,279

AUTOMATIC ANALYZING APPARATUS

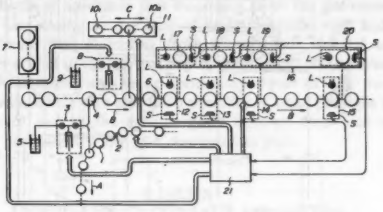
Ryoichi Orimo, Ohme; Masahiko Sakurada, Machida; Taiichi Banno, Hachioji; Sugio Manabe, Kodaira, all of Japan, and Kevin Galle, New York, N.Y., assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,470

Claims priority, application Japan, Apr. 14, 1979, 54-44911

Int. Cl.^{3} G01N *35/04, 35/06*

U.S. Cl. 422—64 **50 Claims**



1. An apparatus for effecting automatic analysis for sample liquids comprising:

means for successively feeding reaction vessels, each containing respective sample liquid to be analyzed, along a given reaction line;

means for delivering a given amount of a given reagent, corresponding to a test item to be measured, into a reaction vessel on the reaction line to form a test liquid which is a mixture of the sample liquid and reagent;

first photometering means arranged at a reaction-condition-monitoring-section, provided along the reaction line, for monitoring a reaction conditon of the test liquid in the vessel;

second photometering means arranged along the reaction line for effecting quantitative analysis for the given test item; and

means for discharging the reaction vessels out of the reaction line after the quantitative analysis for the given test item has been done, the improvement comprising in said second photometering means having a plurality of measuring positions arranged in a precise photometering section which is provided separately from the reaction line, said discharging means being in the precise photometering section, and comprising further means for transporting the reaction vessel from the reaction-condition-monitoring-section into any desired measuring position in the precise photometering section after the test liquid contained in the relevant reaction vessel has been confirmed to reach a predetermined reaction condition.

4,338,280

FLUID SAMPLING

Paul J. Ambers, Westwood, and R. Barry Stevens, Chelmsford, both of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Apr. 2, 1981, Ser. No. 250,438

Int. Cl.^{3} G01N *1/14, 1/18*

U.S. Cl. 422—68 **21 Claims**

1. A liquid sample analyzer of the type having an analysis chamber adapted to receive sample material to be analyzed, sensor means coupled to said analysis chamber for providing an output signal related to a constituent of the sample material,

sampler apparatus including structure defining a sample intake flow path that has an inlet port and is connected to said analysis chamber,

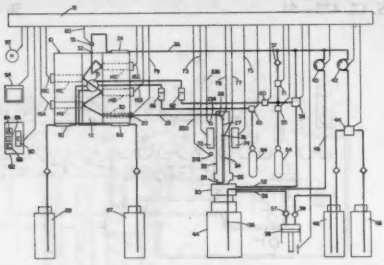
rinse apparatus for communication with a waste system,

said sample intake port and said rinse apparatus being movable relative to one another between a first position in which said inlet port is exposed to the operator and a

second position in which said inlet port is aligned with said rinse apparatus,

drive means for moving said sample inlet port and said rinse apparatus between said first and second positions,

and a sampler control arrangement including means operative when said sample inlet port is in said first position for flowing sample material through said inlet port into said sample intake flow path defining structure,



sensor means responsive to flow of a predetermined quantity of sample material into said sample flow path defining structure for terminating intake of sample material and energizing said drive means to move said inlet port and said rinse apparatus to said second position, and

means operative when said sample inlet port is in said second position for flowing cleaning fluid through said sampler apparatus.

4,338,281

THIN FILM SEMICONDUCTOR GAS SENSOR HAVING AN INTEGRATED HEATING ELEMENT

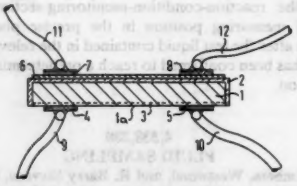
Ludwig Treitinger, Munich; Peter Tischer, Strasslach, and Brigitte Schneider-Gmelch, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,855

Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019387

Int. Cl.³ G01N *27/04*

U.S. Cl. 422—98 **9 Claims**



1. In a thin film semiconductor gas sensor including a metal oxide semiconductor sensor layer wherein the electrical resistance of the metal oxide semiconductor layer changes in dependence upon the nature and concentration of a gas being detected, said sensor having a heating element required for its function integrated therewith; the improvement comprising wherein:

said sensor comprises a semiconductor body having a shell zone located relatively close to an outer surface of such body, said zone being highly doped to the point of degeneration and two metal contact strips positioned on said zone and apart from one another for a heating connection to said sensor.

4,338,282

SELECTIVE COLLECTING SYSTEM OF WASHINGLY TREATED ARTICLES

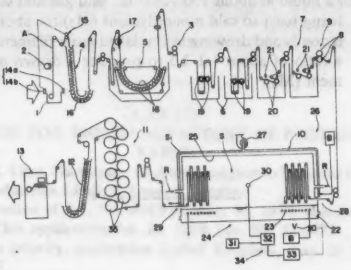
Setsuzo Motooka, Toyonaka; Yukihiro Karigane, Osaka; Osamu Yamazaki, Kishiwada, and Osamu Ochiai, Habikino, all of Japan, assignors to Duskin Franchise Co., Ltd., Osaka, Japan

Filed Jul. 14, 1980, Ser. No. 167,765

Claims priority, application Japan, Jan. 18, 1980, 55/4690; Jan. 19, 1980, 55/4693

Int. Cl.³ B08B *3/04*; A61L *2/06*

U.S. Cl. 422—105 **6 Claims**



1. A selective collecting system for washed articles comprising:

means for washing said articles;

means for conveying said articles in a predetermined path through said washing means;

first detector means located along said path for detecting damaged articles, said first detector means including a first light source and first light receiving means for generating a first detection signal responsive to variations in light transmission through said articles received by said first light receiving means, which variations in light transmission have been predetermined to be indicative of damage to the articles;

second detector means located along said path for detecting results of the washing treatment of said articles, said second detector means including a second light source and second light receiving means for generating a second detection signal responsive to variations in light refraction, from at least one surface of said articles, received by said second light receiving means;

means for comparing said first and second detection signals to a first and second predetermined set of values, respectively, and for generating a control signal in response to variations of said first and second detection signals from first and second set values;

control means for controlling the conditions of the washing treatment in response to said control signal;

winding means for winding said articles washed by said washing means into a roll; and

distributing means disposed to receive said article rolls from said winding means for selectively distributing and sorting said article rolls in response to said control signal.

4,338,283

FLUIDIZED BED COMBUSTOR

Koya Sakamoto; Yutaka Yoneda; Naoki Fujiwara, and Shigehito Takamoto, all of Kure, Japan, assignors to Babcock Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,529

Int. Cl.³ G05D *16/00*; F27B *15/00*; F23C *11/02*

U.S. Cl. 422—112 **6 Claims**

1. A fluidized bed combustor which comprises:

a hollow body containing a combustion chamber and regenera-

tion chamber formed by vertically partitioning said hollow body by a partition wall;

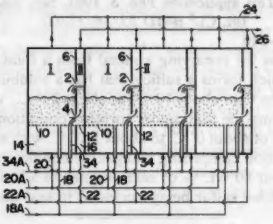
a perforated plate provided at the bottom of said combustion chamber and a perforated plate provided at the bottom of said regeneration chamber;

a particulate solid heat transfer medium containing a combustion gas desulfurizing agent means that will associate with the sulfur of sulfur oxide gas to produce a sulfur-containing medium, said medium to be fluidized and arranged on each of said perforated plates;

means for feeding fuel to said combustion chamber;

means for feeding air for combustion of the fuel and fluidization of said heat transfer medium to said combustion chamber to form a fluidized bed of said heat transfer medium in said combustion chamber;

means for feeding a gas that will cause disassociation of said combined sulfur from said medium and produce a sulfur-containing gas for regeneration of said heat transfer medium and fluidization of said heat transfer medium to said regenerating chamber to form a fluidized bed of said heat transfer medium in said regeneration chamber;



gas-discharging port means provided at the upper part of said combustion chamber for discharging products of combustion of said fuel and gas-discharging port means provided at the upper part of said regeneration chamber for discharging said sulfur-containing gas;

said partition wall having an upper opening and a lower opening;

said lower opening being located in the vicinity of said perforated plates;

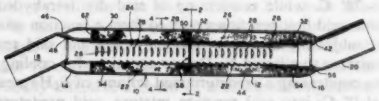
means for transferring said heat transfer medium from said combustion chamber through said lower opening to said regeneration chamber; and said upper opening being located above the level of said fluidized bed formed in said combustion chamber and below the level of said fluidized bed in said regeneration chamber so that said heat transfer medium containing desulfurizing agent means can overflow through said upper opening and recycle from said regeneration chamber to said combustion chamber.

4,338,284

EXHAUST GAS PURIFIER

Vincent E. Ignoffo, Chicago, Ill., assignor to Vinco Sales Corp., Inc., Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 71,857
Int. Cl.³ F01N *3/28, 7/00*
U.S. Cl. 422—171 **11 Claims**



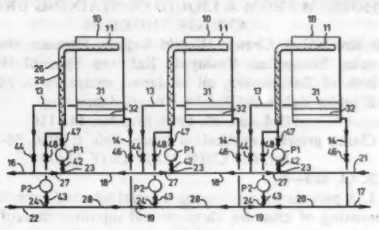
1. An automotive exhaust gas purifier which comprises a tubular core means for conveying hot exhaust gases from an entrant opening to an exit opening in a casing surrounding said core means and defining the outer side of an annular space between said core means and said casing, a plurality of small passages in said core means for passage of exhaust gases between said core means and said casing, a transverse wall dividing said annular space into an upstream segment and a downstream segment, a gas permeable body of catalyst for purifying said hot exhaust gases positioned in said upstream segment of said annular space and surrounding said small passages within said upstream segment, and said transverse wall having a plurality of apertures therein and through which said exhaust gases can flow from said annular space of said upstream segment to the downstream segment, said tubular core being divided into an upstream part extending from the gas entrant end of said casing to one side of said transverse wall and a downstream part extending from the opposite side of said transverse wall to the gas exit end of said casing, said upstream and downstream parts being divided by a part of said transverse wall, which part also has a plurality of small passages for passage of part of the exhaust gases through from said upstream part directly into said downstream part.

4,338,285

LIQUID-LIQUID CONTACT APPARATUS

Donald H. Eberts, Scarborough, Canada, assignor to A. H. Ross & Associates, Toronto, Canada

Continuation of Ser. No. 966,881, Dec. 6, 1978, abandoned. This application Apr. 23, 1981, Ser. No. 256,685
Int. Cl.³ B01D *11/04*
U.S. Cl. 422—257 **10 Claims**



1. Liquid-liquid contacting apparatus comprising a first stage, at least one intermediate stage, and a last stage, each stage comprising:

(a) first and second pumps for pumping respectively a first liquid having a first characteristic density and a second liquid having a second characteristic density greater than said first density, each pump having an outlet and an inlet:

(b) a liquid-liquid mixer apparatus connected in common to the outlets of said pumps, and having an outlet for a liquid-liquid mixture;

(c) a separator vessel having an inlet connected to the outlet of said mixer apparatus for receiving a liquid-liquid mixture from said mixer apparatus and having a first vessel outlet for a disengaged liquid phase of said first characteristic density and a second vessel outlet for a disengaged liquid phase of said second characteristic density.

(d) first and second outlet conduits connected to said first and second vessel outlets, respectively, and

(e) a first auxiliary conduit connected between the first outlet conduit and the inlet to the first pump and a second auxiliary conduit connected between the second outlet conduit and the inlet to the second pump; said liquid-liquid contact apparatus also including sources of supply of said first and second liquids, respectively, a first supply conduit connecting the source of supply of said first liquid to the inlet of said first pump in said last stage, a second supply conduit connecting the source of supply of said second liquid to the inlet of said second pump in said first stage, said first outlet conduit in the last stage and said first outlet conduit in said at least one intermediate stage also con-

necting said first vessel outlet in each stage to the inlet of the first pump in the preceding stage, said second outlet conduit in the first stage and said second outlet conduit in said at least one intermediate stage connecting said second vessel outlet in each stage to the inlet of the second pump in the succeeding stage, a first discharge conduit connected to the first outlet conduit in the first stage, and a second discharge conduit connected to the second outlet conduit in the last stage; and said first pump in said last stage having a valve interposed between it and a point of connection between the first supply conduit and the first auxiliary conduit in said last stage; said first pump in said at least one intermediate stage and in said first stage having a valve interposed between it and a point of connection between the first auxiliary conduit of said stage and the first outlet conduit of the succeeding stage; said second pump in said first stage having a valve interposed between it and a point of connection between the second supply conduit and the second auxiliary conduit in said first stage; and said second pump in said at least one intermediate stage and in said last stage having a valve interposed between it and a point of connection between the second auxiliary conduit of said stage and the second outlet conduit of the preceding stage, whereby said pumps can be isolated from the supply, outlet and auxiliary conduits, permitting bypass of selected stages.

4,338,286

PROCESS FOR RECOVERING URANIUM AND/OR THORIUM FROM A LIQUID CONTAINING URANIUM AND/OR THORIUM

Eiichiro Nakai, Urawa; Hiroshi Kojima, Hasuda; Shoichi Tanaka, Musashino; Toshiyuki Kai, and Shinichi Hasegawa, both of Tohkaimura, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1980, Ser. No. 143,116
Claims priority, application Japan, Feb. 1, 1980, 55-11191
Int. Cl.³ C01G 56/00; C01F 15/00
U.S. Cl. 423—12 2 Claims

1. A process for recovering a metal selected from the group consisting of uranium, thorium and mixtures thereof, from a liquid containing said metal comprising the steps of adding water glass to said liquid in the presence of ammonia water and an aqueous material selected from the group consisting of fluorine, nitric acid radical and chlorine to cause a precipitate composed mainly of amorphous silica to be formed, whereby said metal is absorbed, filtering said precipitate therefrom, treating said filtered precipitate with acid to cause said absorbed metal to be eluted therefrom, filtering said precipitate to recover said eluted metal as an acidic filtrate therefrom, adding ammonia water to an acidic solution of said filtrate containing said eluted metal to cause a precipitate composed of ammonium salt of said metal to be formed, and filtering said ammonium salt precipitate therefrom.

4,338,287

PROCESS FOR CONDITIONING TUNGSTEN CONCENTRATES

Robert F. Hogsett, Arvada; Dale K. Huggins, Golden, and Leo W. Beckstead, Arvada, all of Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,912
Int. Cl.³ C01G 41/00
U.S. Cl. 423—53 7 Claims

1. A process for conditioning a tungsten concentrate selected from the group consisting of scheelite and wolframite concentrates and combinations thereof and containing sulfur as sulfide, and calcite to fix at least a portion of the sulfur as calcium sulfate by reaction with the calcite, which comprises providing a tungsten concentrate having a calcite content such that less than about 15 wt. % calcium sulfate based on the weight of the tungsten in the concentrate as WO_3 will be formed and heating the concentrate to a temperature of at least about 500° C. in an oxidizing atmosphere to oxidize substantially all the sulfur in the concentrate to provide a conditioned concentrate having a calcium sulfate content less than about 15% based on the weight of the tungsten as WO_3, provided that when the tungsten concentrate is scheelite it is heated so as to provide the conditioned concentrate with a free lime content less than about 15% based on the weight of the tungsten as WO_3, whereby the conditioned concentrate can be efficiently leached with alkali metal carbonates or hydroxides and the resulting alkali metal tungstate solution can be effectively treated to recover an ammonium tungstate solution.

4,338,288

SORBENT FOR REMOVING METALS FROM FLUIDS

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 64,694, Aug. 8, 1979, abandoned, which is a division of Ser. No. 942,252, Sep. 14, 1978, Pat. No. 4,222,897. This application Feb. 3, 1981, Ser. No. 231,077
Int. Cl.³ B01D 53/34, 15/00
U.S. Cl. 423—210 7 Claims

1. A process for removing a metal from a fluid, said metal being one which forms a sulfide that has a solubility product constant of less than about 10^{-20} at about 25° C., which comprises contacting the fluid under sorption conditions including a temperature of about 0° C. to about 120° C. with a particulate solid composition comprising manganese nodules and from 0.1 wt. % to about 60 wt. % of said nodules of added elemental sulfur, said added sulfur being occluded in said nodules.

4,338,289

PREPARATION OF DECABORANE (14) THROUGH HYDRIDE ION ABSTRACTION REACTIONS

Sheldon G. Shore, Columbus; Mark A. Toft, Amlin, both of Ohio, and Francis L. Himpsl, Matawan, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 10, 1981, Ser. No. 291,713
Int. Cl.³ C01B 35/18
U.S. Cl. 423—294 4 Claims

1. A method for the preparation of decaborane-14($B_{10}H_{14}$) through the conversion of B_5H_9 to $[N(CH_3)_4][B_9H_{14}]$, the hydride ion abstraction reaction of $[N(CH_3)_4][B_9H_{14}]$, by a boron trihalide to form $B_{10}H_{14}$, and the separation and recovery of $B_{10}H_{14}$, in pure form by a sublimation process, said method comprising completing steps (i–IX) as set forth hereinbelow and relating to said conversion, completing steps (X–X-III) as set forth hereinbelow and relating to said hydride ion abstraction reaction, and completing steps (XIV–XV) as set forth hereinbelow and relating to said separation and recovery as follows:

(i) adding to a first reaction vessel provided with a means for stirring and while maintained in a dry box of N_2 atmosphere, a predetermined weight of NaH and $[(CH_3)_4N][Cl]$ to provide a 1:1 molar ratio of said NaH and said $[(CH_3)_4N][Cl]$;

(ii) removing said first reaction vessel from said dry box and attaching said first reaction vessel to a vacuum means for removing of dry box N_2;

(iii) condensing a predetermined volume of dry tetrahydrofuran into said first reaction vessel maintained at about −78° C. while condensing of said dry tetrahydrofuran into said first reaction vessel to form a reaction mixture;

(iv) subjecting said first reaction vessel and said reaction mixture to a liquid N_2 Dewar container for cooling prior to condensing a predetermined volume of B_5H_9 measured at 0° C. into said reaction mixture, said predetermined volume of said B_5H_9 providing a 2 molar ratio of said B_5H_9 to said 1:1 molar ratio of said NaH and $[N(CH_3)_4][Cl]$;

(v) warming said first reaction vessel and said reaction mixture to a room temperature of about 26° C.–27° C. and

stirring said reaction mixture vigorously for about 12 hours to complete a reaction period to form the solid reaction products $[N(CH_3)_4][B_9H_{14}]$ and NaCl in said reaction mixture;

(vi) cooling said first reaction vessel and said solid reaction products to −196° C. and removing hydrogen and other volatiles;

(vii) warming said first reaction vessel and said solid reaction products to about 0° C. while removing said solvent under vacuum from said solid reaction products $[N(CH_3)_4][B_9H_{14}]$and NaCl;

(viii) transferring said solid reaction products to a second reaction vessel in a dry box, said second reaction vessel having a smaller capacity than said first reaction vessel;

(ix) removing said second reaction vessel from dry box and evacuating said second reaction vessel of dry box N_2;

(x) condensing a predetermined molar volume of a boron trihalide selected from BCl_3 freed from HCl or BBr_3 freed from HBr into said second reaction vessel maintained at −196° C., said predetermined molar volume of said boron trihalide being in ratio of 1:2 to said condensed B_5H_9;

(xi) warming contents of said second reaction vessel to about 11° C. to room temperature and reacting while stirring said contents of said second reaction vessel for a predetermined time period of about 4 hours to form reaction products including $B_{10}H_{14}$ by hydride ion abstraction;

(xii) cooling said second reaction vessel and said reaction products including $B_{10}H_{14}$ and removing hydrogen;

(xiii) warming said second reaction vessel to a room temperature range of about 26° C.–27° C. and removing trace of volatile products by vacuum pumping;

(xiv) transferring said second reaction vessel to a dry box; and,

(xv) separating said $B_{10}H_{14}$ by sublimation from said second reaction vessel and recovering said $B_{10}H_{14}$ in pure form.

4,338,290

HYDROLYSIS OF HALOHYDRIN OR DIHALIDE WITH HI CATALYST

Jawad H. Murib, and John M. Inskeep, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,979
Int. Cl.³ C07C *31/20*; C01B *7/01*
U.S. Cl. 423—481 **16 Claims**

1. A process for preparing glycols which comprises reacting a compound of the general formula

X—R—Y

in which X is a halogen atom, Y is a halogen atom or a hydroxyl group and R is an unbranched alkylene or cycloalkylene group of from 2 to about 12 carbon atoms or a branched alkylene or cycloalkylene group of from 2 to about 12 carbon atoms in the main chain and containing one or more alkyl, cycloalkyl, aryl, alkaryl or aralkyl groups of a total of from 1 to about 12 carbon atoms, with water in the presence of a catalytically effective amount of a catalyst composition consisting of hydriodic acid to provide a glycol of the general formula

HO—R—OH

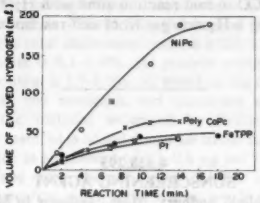
in which R has the same meaning given above, and haloacid.

4,338,291

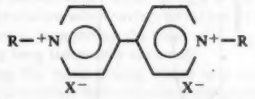
PROCESS FOR PRODUCING HYDROGEN WITH VIOLOGEN CATION RADICAL USING METAL COMPLEX OF MACROCYCLIC POLYDENTATE COMPOUND AS CATALYST

Akira Yamada, Kamifukuoka; Takashi Tanno, Asaka; Dieter Wehle, and Masao Kaneko, both of Wako, all of Japan, assignors to Rikagaku Kenkyusho, Japan

Filed Apr. 22, 1981, Ser. No. 256,554
Claims priority, application Japan, Aug. 29, 1980, 55-119415
Int. Cl.³ C01B *1/18*
U.S. Cl. 423—648 R **13 Claims**



1. A process for producing hydrogen by reducing proton (H^+) in a solution by adding metal complex composed of complexing agent selected from the group consisting of phthalocyanine, tetraphenylporphyrin, tetraazaannulene, hemiporphyrazine, salicylaldehyde, ethylenediimine, acetylacetone ethylenediimine and derivatives thereof and ion of metal selected from the group consisting of metals included in the groups IB, IIA, IIB, IIIA, IVA, IVB, VIB, VIIB and VIII of the periodic table as catalyst to said solution containing reduced type of viologen (viologen cation radical), said viologen having a general formula:



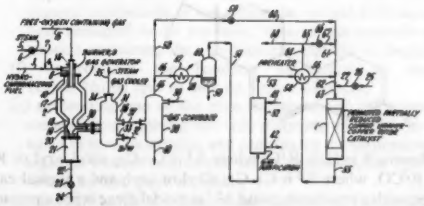
wherein R is an alkyl group having 1 to 6 carbon atoms or a benzyl group and X^- is a halogen ion.

4,338,292

PRODUCTION OF HYDROGEN-RICH GAS

Roger G. Duranleau, Georgetown, Tex., and Walter C. Gates, Jr., Carmel, N.Y., assignors to Texaco, Inc., White Plains, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,374
Int. Cl.³ C01B *1/08, 2/10*
U.S. Cl. 423—656 **30 Claims**



1. A process for the production of a hydrogen-containing gas comprising:

(1) introducing a feed gas mixture comprising CO and H_2O at a temperature in the range of about 375° to 1500° F. and

a pressure in the range of about 1 to 300 atmospheres into a reaction zone containing an unsupported catalyst comprising an alkali-metal promoted partially reduced mixture of at least one copper uranate and at least one oxide of copper; wherein at least 30 to about 80 weight percent of the copper in the catalyst is present in the metallic state and of the remainder of the copper 85 to 100 weight % is in the form of copper uranate and the balance of the copper if any is present in the form of copper oxide; and the total weight percent of uranium present in said catalyst basis total weight of said catalyst composition is in the range of over 50 to about 90 weight percent;

(2) converting CO in said gas mixture into H_2+CO_2 by reacting CO in said reaction zone with H_2O; and

(3) removing a H_2-rich gas from said reaction zone.

4,338,293

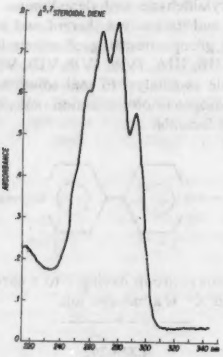
SUNSCREENING AGENT

Michael F. Holick, Sudbury, Mass., assignor to Massachusetts General Hospital, Boston, Mass.

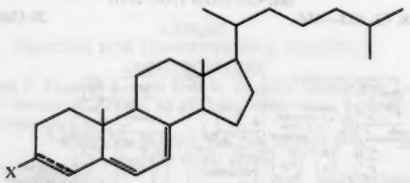
Filed Feb. 25, 1981, Ser. No. 238,075

Int. Cl.³ A61K *7/42*

U.S. Cl. 424—59 **11 Claims**

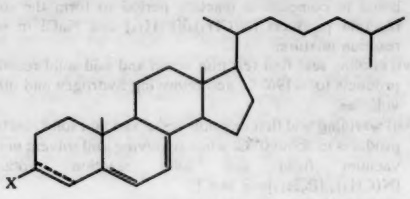


1. A sunscreen composition which comprises a sunscreening amount of a substituted or unsubstituted $\Delta^{5,7}$ steroidal diene capable of blocking UVB radiation and having the formula



wherein X is H or R^1O; where R^1 is C_1–C_{12} alkyl, aryl or R^1 is R^2CO, where R^2 is C_1–C_{12} alkyl or aryl; and a topical carrier; with a proviso that said $\Delta^{5,7}$ steroidal diene is not a precursor to a biologicaliy active vitamin D compound.

7. A method for protecting the human skin from ultraviolet radiation which comprises applying to said skin a substituted or unsubstituted $\Delta^{5,7}$ steroidal diene capable of blocking UVB radiation and having the formula



wherein X is H or R^1O, where R^1 is C_1–C_{12} alkyl, aryl or R^1 is R^2CO, where R^2 is C_1–C_{12} alkyl or aryl; with the proviso that said diene is not a precursor to a biologically active vitamin D compound.

4,338,294

ANTIPERSPIRANT COMPOSITIONS AND METHODS FOR THEIR PREPARATION

Rolf Mast, Scottsdale, Ariz., assignor to Armour-Dial, Inc., Phoenix, Ariz.

Filed Dec. 17, 1975, Ser. No. 641,445

Int. Cl.³ A61K *7/34, 7/36, 7/38*

U.S. Cl. 424—68 **14 Claims**

1. An antiperspirant composition comprising an aluminum salt in an amount of from 1 to 50 percent, a smectite mineral in an amount of from 0.5 to 10.0 percent, polyethylene glycol having a molecular weight of from 100 to 10,000 and in an amount of from 0.5 to 10.0 percent and water in an amount of from 20 to 97 percent, said percentages being by weight based on the total weight of the composition.

4,338,295

HAIR SETTING AND BODYING COMPOSITION AND METHOD

Derek R. Highley, North Weymouth, and Jayant N. Sane, Framingham, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 12, 1980, Ser. No. 206,126

Int. Cl.³ A61K *7/09, 7/11*

U.S. Cl. 424—71 **10 Claims**

1. In a hair treating composition for imparting improved setting properties comprising an aqueous solution containing about 0.5 to 20% by weight of a mixture of glyceraldehyde, resorcinol, and an oligomeric precondensate of glyceraldehyde and resorcinol, said composition being prepared by heating an aqueous mixture containing glyceraldehyde, resorcinol, and an acid selected from the class consisting of boric acid and silicic acid, the molar ratio of glyceraldehyde to resorcinol being about 19:1 to 1:19 and the molar ratio of glyceraldehyde to said acid being about 4:1 to 1:1.5; wherein the improvement comprises including in said composition about 0.1% to 20% by weight of urea.

4,338,296

INFLUENZA VIRUS AND PROCESS OF PRODUCING A VACCINE THEREFROM

Michele Löbmann, Bierges, and Gerard Florent, Genval, both of Belgium, assignors to SmithKline-RIT, Belgium

Division of Ser. No. 85,437, Oct. 16, 1979, Pat. No. 4,278,662. This application Feb. 4, 1981, Ser. No. 231,528

Int. Cl.³ A61K *39/12;* C12N *7/00*

U.S. Cl. 424—89 **4 Claims**

1. The recombinant influenza virus strain CNCM No. I-099.

2. A process of producing a live influenza virus vaccine which comprises growing the influenza virus strain of claim 1 in the allantoic cavity of embryonated chicken eggs for a period of time sufficient to permit production of a large amount of said virus, harvesting the resulting virus material and combining it with a pharmaceutical diluent.

4,338,297

POLYPEPTIDE ACTIVE POLLEN IMMUNOSUPPRESSANT FRACTION

Jacob G. Michael, 418 Chisholm Trail, Cincinnati, Ohio 45215, and Amadeo J. Pesce, 5769 White Chapel Dr., Cincinnati, Ohio 45236

Filed Apr. 14, 1980, Ser. No. 139,881
Int. Cl.³ A61K *39/36*; C07G *7/00*
U.S. Cl. 424—91 1 Claim

1. A safe and effective pollen desensitizing product from ragweed pollen produced by:

(a) subjecting said ragweed pollen to controlled proteolytic enzymatic digestion using an enzyme selected from the group consisting essentially of nagarase, pepsin and immobilized pepsin to produce a specific degraded substance defined by a molecular weight of less than about 10,000, said substance being free of disulfide bonds and rich in tyrosine and possessing residum active antigens, and

(b) removing said residuum reactive antigens by reacting said degraded substance with a skin-sensitizing antipollen antibody to produce said pollen desensitizing product, which is non-reactive with said antipollen antibodies.

4,338,298

VACCINE FOR PASSIVE IMMUNIZATION AGAINST ENTERIC COLIBACILLOSIS AND METHOD OF USE

Lyle L. Myers, Bozeman, Mont., assignor to Endowment and Research Foundation at Montana State University, Bozeman, Mont.

Filed Apr. 4, 1980, Ser. No. 137,311
Int. Cl.³ A61K *39/108, 39/116*
U.S. Cl. 424—92 22 Claims

1. A vaccine for the passive immunization of a newborn food animal against *E. coli*-caused diarrheal disease, said animal being susceptible to diarrheal disease caused by enterotoxigenic *E. coli* that contain K antigen 30, 35, 85 or 99, said vaccine consisting essentially of:

(a) four *E. coli* K antigens, these antigens being K30, K35, K85 and K99; the concentration of all of said antigens per ml of said vaccine and of each of said antigens per ml of said vaccine being sufficient to effect said passive immunization by the stimulation of colostral antibodies reactive with *E. coli* K antigens 30, 35, 85, and 99, when the dam of said animal is injected prior to giving birth to said animal with a quantity of said vaccine that produces said passive immunization; and

(b) a physiologically acceptable aqueous carrier.

4,338,299

VACCINE AGAINST PERTUSSIS

Chrisso K. Vesselinova-Jenkins, Blackwood, Wales, assignor to DSO "Pharmachim", Sofia, Bulgaria

Filed Nov. 17, 1980, Ser. No. 207,434
Int. Cl.³ A61K *39/10*
U.S. Cl. 424—92 5 Claims

1. A pertussis vaccine which comprises live pertussis bacteria of the *Bordetella pertussis* strain EM 1964 in a pertussis immunization dosage.

4,338,300

USE OF PURIFIED CLOSTRIDIAL COLLANGENASE IN THE TREATMENT OF PEYRONIE'S DISEASE

Martin K. Gelbard, Van Nuys, Calif., assignor to The Regents Of The University Of California, Berkeley, Calif.

Filed Feb. 5, 1981, Ser. No. 231,731
Int. Cl.³ A61K *37/48*
U.S. Cl. 424—94 7 Claims

1. The method of treating Peyronie's disease in mammals which comprises administering an effective amount of the enzyme collagenase directly into the plaques which form in the course of the disease.

4,338,301

LUNG TISSUE EXTRACT USEFUL FOR TREATING HYALINE-MEMBRANE DISEASE AND METHOD FOR PRODUCING THE EXTRACT

Fujiwara Tetsuro, Akita; Tanaka Yuji, Toda, and Takei Tsunetomo, Kuki, all of Japan, assignors to Tokyo Tanabe Co., Ltd., Japan

Filed May 21, 1980, Ser. No. 152,048
Claims priority, application Japan, Jun. 2, 1979, 54-68211
Int. Cl.³ A61K *35/12*
U.S. Cl. 424—95 23 Claims

1. Surface active material containing phospholipid, neutral lipid, total cholesterol, carbohydrate, protein and water, which material is obtained from lung tissue of a mammal with or without further phospholipid, characterized in that the phospholipid content is 75.0–95.5%, the neutral lipid content is 1.8–14.0%, the total cholesterol content is 0.0–3.0%, the carbohydrate content is 0.1–1.5%, the protein content is 0.5–5.0% and water content is 1.7–6.0%, all based on the dried weight of said material, the minimum and maximum surface tension ranges of the material estimated by Wilhelmy's method wherein the material is added dropwise to the surface of physiological saline in an amount of 0.3–0.8 μg per square centimeter of surface area thereof being 2.1–8.6 dynes/cm and 48.2–58.0 dynes/cm when surface areas are 21.0 cm^2 and 45.6 cm^2 respectively.

13. A method of producing a surface active material containing phospholipid, neutral lipid, total cholesterol, carbohydrate, protein and water, which material is obtained from lung tissue of a mammal with or without further phospholipid, characterized in that the phospholipid content is 75.0–95.5%, the neutral lipid content is 1.8–14.0%, the total cholesterol content is 0.0–3.0%, the carbohydrate content is 0.1–1.5%, the protein content is 0.5–5.0% and water content is 1.7–6.0%, all based on the dried weight of said material, the minimum and maximum surface tension ranges of the material estimated by Wilhelmy's method wherein the material is added dropwise to the surface of physiological saline in an amount of 0.3–0.8 g per square centimeter of surface area thereof being 2.1–8.6 dynes/cm and 48.2 to 58.0 dynes/cm when surface areas are 21.0 cm^2 and 45.6 cm^2 respectively, comprising the steps of:

(a) mincing lung tissue of a mammal;

(b) bringing the minced lung tissue into contact with an electrolyte solution and subjecting the resultant mixture to one of filtration under pressure and centrifugation at about 500–1,500 rpm to obtain an extract;

(c) centrifuging the extract at about 12,000–16,000 rpm to obtain a crude sediment;

(d) forming an aqueous suspension of the crude sediment and dissolving sodium chloride in the aqueous suspension of the crude sediment to obtain a density adjusted suspension and then centrifuging the adjusted suspension at about 4,000–10,000 rpm so as to divide it into three layers, the top layer being an emulsified scum layer which is then taken up;

(e) forming an aqueous suspension of the top layer and dialyzing the aqueous suspension through a semi-permeable membrane to remove inorganic salts and water-soluble organic compounds of low molecular weight both having been remained in the top layer, whereby an aqueous suspension containing the non-dialyzing material is obtained;

(f) centrifuging the resultant suspension at about 12,000–16,000 rpm to take up a pure sediment;

(g) suspending one of the pure sediments and the aqueous suspension containing the non-dialyzing material, in an aqueous sucrose solution and centifuging the suspension of aqueous sucrose solution at about 18,000–40,000 rpm to obtain another pure sediment;

(h) drying the pure sediment and suspending the resultant dried pure sediment in acetone to take up an acetone-insoluble material which is then dried and suspended further in organic solvent mixture followed by filtration of the resultant suspension so as to obtain a purified filtrate; and

(i) mixing the purified filtrate with sterile water and subject-

ing the resultant mixture to filtration, the filtrate of which is then concentrated under reduced pressure to obtain a solid residue, followed by one of lyophilization of the said solid residue so that the phospholipid content is 75.0–95.5% or adding further phospholipid solid residue to bring the phospholipid content to 75.0–95.5%.

4,338,302

HERBICOLIN AND MICROBIOLOGICAL METHOD FOR THE PREPARATION THEREOF

Gunther Winkelmann, Marchenseestr. 5, 7407 Rottenburg 4, Wendelsheim, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,638

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938993

Int. Cl.³ A61K *35/00;* **C12P** *1/04;* **C12N** *1/20*

U.S. Cl. 424—117 **15 Claims**

1. Herbicolin A, characterized by the following properties:

(1) characteristic IR bands in potassium bromide at 3200, 2900, 2830, 1730, 1650, 1530 cm^{-1}, as shown in the attached FIG. 1;

(2) solubility:

very well soluble in:
- methanol
- ethanol
- 1-propanol
- 1-butanol

well soluble in:
- ethylene glycol
- ethylene glycol monomethyl ether
- glycerin
- water

sparingly soluble in:
- acetone
- ethyl acetate
- acetonitrile

almost insoluble in:
- chloroform
- dichloromethane
- diethyl ether
- petroleum ether

wherein the term "well soluble" is understood to mean that sufficient herbicolin A is present in solution to attain the biological effect thereof;

(3) elementary analysis: found: C 46.1; H 7.1; N 11.8; S 1.9; molecular mass 1500–3000;

(4) characteristic reactions:

ninhydrin—negative

chlorine/4,4'-tetramethyldiaminodiphenylmethane—positive;

(5) no absorption in the ultraviolet spectrum between 220 and 350 nm;

(6) detectable amino acids:

(6*a*) detectable fatty acids, β-hydroxy myritic acid

Amino Acids	Ratio (Approximation)
Glycine	2
L-Threonine	1
D-Allothreonine	1
D-Glutamic Acid	1
D-Leucine	1
L-Arginine	1

(7) ^{13}C-NMR spectrum with ppm (δ) values in $^{12}CD_3OD$ of 177.7, 175.1, 174.5, 173.3, 172.9, 172.5, 171.2, 170.9, 170.8, 169.8, 167.9, 158.3, 132.5, 122.4, 97.9, 74.9, 73.8, 73.1, 72.0, 71.5, 69.7, 68.8, 62.5, 62.1, 57.4, 54.6, 53.8, 53.2, 44.8, 44.1, 42.7, 40.8, 38.4, 33.0, 32.4, 32.0, 30.7, 30.4, 26.6, 25.9, 23.6, 21.98, 17.6, 16.2, and 14.4, as shown in the attached FIGS. 2*a* and 2*b*;

(8) the following R_f values:

1-butanol/glacial acetic acid/water (4:1:1)=R_f0.06

chloroform/methanol/glacial acetic acid/water (65:25:3:4)=R_f0.10; and

(9) efficacy: strong fungitoxic effect at concentrations of 0.1 to 1 μg/ml;

paramecia species (slipper animalcules) and amoeba are killed in concentrations of 1–2 μg/ml in a few seconds; and

erythrocytes are lysed in concentrations of about 10 μg/ml (human blood).

4,338,303

TREATMENT OF PARASITIC DISEASES

Ronald L. Nagel, New York, and Carmen E. Raventos, New Rochelle, both of N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,186

Int. Cl.³ A61K *33/00, 31/275*

U.S. Cl. 424—129 **9 Claims**

1. A method for treating a protozal parasitic disease in an animal comprising exposing the protozoal parasitic infecting agents of said diseased animals to an effective amount of the compound which comprises R_1—[O—C=N] wherein R_1 is one selected from the group consisting of alkali metals, ammonium and low molecular weight organo groups selected from the group consisting of alkyl, aryl, aroalky, and allyl groups.

4,338,304

COMPOSITE FOR TREATING DIABETES

Hiroshi Kamimae, Yokohama, and Tadashi Ishikawa, Sagamihara, both of Japan, assignors to Nihon Nosan Kogyo Kabushiki Kaisha, Yokohama, Japan

Filed Oct. 9, 1980, Ser. No. 195,638

Claims priority, application Japan, Oct. 29, 1979, 54/138764

Int. Cl.³ A61K *33/18*

U.S. Cl. 424—150 **1 Claim**

1. A method of treating diabetic patients which comprises dosing said patient with one or more eggs containing from 300 μg to 2,000 μg of iodine so that the total dosage is from 300 μg to 2,000 μg of iodine.

4,338,305

USE OF LRH AND LRH AGONISTS

Alan Corbin, Radnor, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 561,524, Mar. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,302, Nov. 13, 1974, Pat. No. 4,272,432. This application Aug. 11, 1975, Ser. No. 602,152

Int. Cl.³ A61K *37/00*

U.S. Cl. 424—177 **24 Claims**

1. A method for preventing pregnancy in a menstruating mammal which comprises administering luteinizing hormone releasing hormone or an aganist thereof to said mammal for from three to about fourteen days, during the period extending from about three days prior to ovulation to the time of normal menses, in an amount sufficient to inhibit or terminate implantation of a fertilized ovum.

4,338,306

ADJUVANT FOR PROMOTING ABSORPTION OF PHARMACOLOGICALLY ACTIVE SUBSTANCES THROUGH THE RECTUM

Kazuhiko Kitao, and Ken-ichi Nishimura, both of Kyoto, Japan, assignors to Kyoto Yakuhin Kogyo Kabushiki Kaisha, Kyoto, Japan

Filed May 12, 1980, Ser. No. 149,132
Claims priority, application Japan, May 10, 1979, 54-57690; Mar. 19, 1980, 55-35128
Int. Cl.³ A61K *31/43, 31/54, 37/26, 47/00*
U.S. Cl. 424—178 **12 Claims**

1. A rectally-administrable pharmaceutical composition which comprises:

(a) an effective amount of at least one pharmaceutically-active component selected from the group consisting of a penicillin, a cephalosporin and insulin and

(b) a sufficient amount of an adjuvant selected from the group consisting of a fatty acid having from 8 to 12 carbon atoms, leucinic acid and a nontoxic salt of either to promote absorption of the pharmaceutically-active component from the rectum into blood circulation.

4,338,307

2'-N-DES-β-LYSYL ANTIBIOTIC AX-127B-1 AND 4-N-ACYL AND ALKYL DERIVATIVES THEREOF

Paul Kurath, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 10, 1980, Ser. No. 205,813
Int. Cl.³ A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **15 Claims**

1. 2'-N-Des-β-lysyl-antibiotic AX-127B-1 or a pharmaceutically acceptable salt thereof.

15. A pharmaceutical composition comprising a antibacterially effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier or diluent.

4,338,308

4-N-β-LYSYL-2'-N-DES-β-LYSYL ANTIBIOTIC AX-127B-1 AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Paul Kurath, Waukegan, and Earl E. C. Fager, Lake Villa, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 10, 1980, Ser. No. 205,814
Int. Cl.³ A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **2 Claims**

1. 4-N-β-Lysyl-2'-N-Des-β-lysyl-antibiotic AX127B-1 or a pharmaceutically acceptable salt thereof.

2. A pharmaceutical composition comprising an antibacterially effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier or diluent.

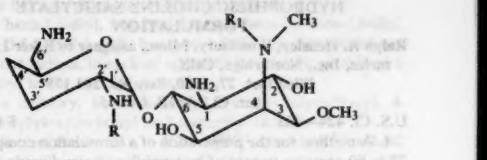
4,338,309

4',5'-DIHYDRO-ANTIBIOTIC AX-127B-1; 2'-N-DES-β-LYSYL-4',5'-DIHYDRO-ANTIBIOTIC AX-127B-1; AND 4-N-DERIVATIVES THEREOF

Paul Kurath, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 10, 1980, Ser. No. 205,815
Int. Cl.³ A61K *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **68 Claims**

1. An antibiotic AX-127B-1 derivative represented by the formula



wherein: R is selected from the group consisting of hydrogen or β-lysyl; R_1 is selected from the group consisting of hydrogen, acyl, aminoacyl, diaminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, loweralkyl, aminoloweralkyl, diaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, N-loweralkylaminohydroxyloweralkyl, and N,N-diloweralkylaminohydroxyloweralkyl; and the pharmaceutically acceptable salts thereof.

68. A method of treating mammalian patients suffering from infection by a susceptible organism comprising administering a therapeutically effective amount of a compound of claim **1** to said patient.

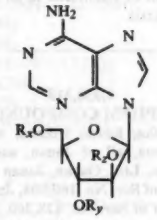
4,338,310

ALKOXYALKANOATE ESTERS OF ARABINOFURANOSYLADENINE

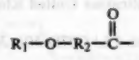
Robert Vince, St. Paul, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jan. 16, 1981, Ser. No. 225,567
Int. Cl.³ A61K *31/70;* **C07H** *19/16*
U.S. Cl. 424—180 **16 Claims**

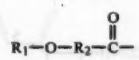
1. A compound of the formula:



wherein R_x, R_y and R_z are



or hydrogen and at least one of R_x, R_y and R_z is



and R_1 is a lower alkyl radical having 1 to 6 carbons and R_2 is an alkylene radical having from 1 to 6 carbons.

9. A topical antiviral composition for treating susceptible viral infection comprising an antivirally effective amount of a compound of claim **1** in a topically acceptable vehicle.

11. A method of treating susceptible viral infections comprising applying to the infected area of a mammal a composition of claim **9**.

4,338,311
HYDROPHILIC CHOLINE SALICYLATE FORMULATION

Ralph A. Heasley, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Oct. 27, 1980, Ser. No. 201,175
Int. Cl.³ A61K *31/615*
U.S. Cl. 424—233 5 Claims

1. A method for the preparation of a formulation comprising 25 to 60 parts by weight of hydrophilic silicon dioxide and 75 to 40 parts by weight of choline salicylate, the sum of the parts of hydrophilic silicon dioxide and choline salicylate being 100, which comprises the steps of:

(1) suspending a choline salt in an inert solvent,
(2) adding a metal salicylate salt,
(3) mixing,
(4) cooling the reaction mixture and filtering to remove the inorganic salt,
(5) adding an amount of hydrophilic silica to provide a proportion of hydrophilic silicon dioxide to choline salicylate within the specified range,
(6) evaporating the residual solvent, and
(7) drying the recovered choline salicylate hydrophilic silica formulation.

4,338,312
METHOD FOR PREVENTING PARTURIENT PARESIS IN DAIRY CATTLE

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, and Neal A. Jorgensen, Middleton, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 11, 1981, Ser. No. 262,093
Int. Cl.³ A01N *45/00;* A61K *31/59*
U.S. Cl. 424—236 11 Claims

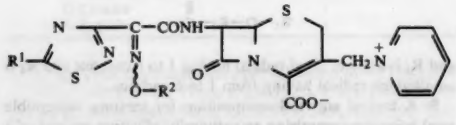
1. The method for prophylactically treating dairy cattle for parturient paresis which comprises administering to the cattle a combination of a 25-hydroxylated form of vitamin D and a 1α-hydroxylated form of vitamin D in an amount sufficient to induce said prophylaxsis.

4,338,313
CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Kashikiriyama, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 160,904, Jun. 18, 1980, which is a continuation-in-part of Ser. No. 128,260, Mar. 7, 1980, which is a continuation-in-part of Ser. No. 116,984, Jan. 30, 1980, which is a continuation-in-part of Ser. No. 108,161, Dec. 28, 1979. This application Aug. 22, 1980, Ser. No. 180,295
Claims priority, application United Kingdom, Oct. 12, 1979, 7935538
Int. Cl.³ C07D *501/20*
U.S. Cl. 424—246 8 Claims

1. Cephem compounds comprising the syn isomer of the formula:



wherein

R^1 is amino or a protected amino group, and

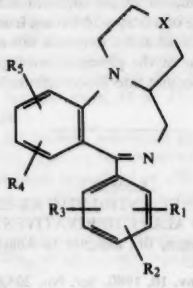
R^2 is lower alkyl of from 1 to 6 carbon atoms, and pharmaceutically acceptable salts thereof.

4,338,314
[1,2]ANELLATED-7-PHENYL-1,4-BENZODIAZEPINE AND PHARMACEUTICAL COMPOSITIONS THEREOF AND USE FOR TREATMENT OF ULCERS

Hans Liepmann; Rolf Hueschens, both of Hanover; Wolfgang Milkowski, Burgdorf; Horst Zeugner; Insa Hell, both of Hanover, and Klaus-Ullrich Wolf, Hänigsen, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,146
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835708
Int. Cl.³ C07D *487/04, 489/04, 513/04;* A61K *31/55*
U.S. Cl. 424—246 22 Claims

1. A compound selected from the group of [1,2]anellated-7-phenyl-1,4-benzodiazepines having the Formula I



I

wherein

X is oxygen, sulfur or NR;

R is H,

C_1–C_5 alkyl,

C_1–C_5 alkyl, substituted with a terminal phenyl group, or a terminal phenyl group substituted with one or 2 methoxy groups, 3,4-methylenedioxy group or 3,4-ethylenedioxy group,

C_2–C_5 alkyl, substituted with terminal halogen, hydroxy or methoxy or,

C_3–C_5 alkenyl

R_1, R_2, R_3, R_4 and R_5 are the same or different and are H, halogen, trifluoromethyl, non-sterically hindering nitro, alkyl, or alkoxy wherein alkyl is non-sterically hindering C_1–C_4 alkyl or two neighboring groups together represent methylenedioxy or ethylenedioxy group and the pharmaceutically acceptable acid addition salts thereof.

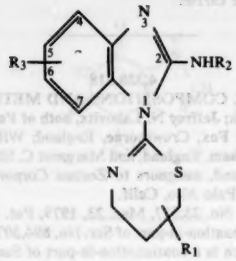
20. A method of treating a patient for relief of an ulcer condition comprising the step of administering to said patient an amount of the compound claimed in claim 1 effective to relieve said condition.

4,338,315
ANTIVIRAL METHOD EMPLOYING THIAZINYL BENZIMIDAZOLE DERIVATIVES

Charles J. Paget; James W. Chamberlin, both of Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 94,129, Nov. 14, 1979, Pat. No. 4,293,558, which is a division of Ser. No. 2,836, Jan. 12, 1979, Pat. No. 4,216,313, which is a division of Ser. No. 769,358, Feb. 16, 1977, Pat. No. 4,150,028, which is a continuation-in-part of Ser. No. 626,014, Oct. 28, 1975, abandoned. This application May 20, 1981, Ser. No. 265,480
Int. Cl.³ A61K *31/54;* A01N *43/86*
U.S. Cl. 424—246 36 Claims

1. A method of suppressing the growth of a virus which comprises adding an antivirally effective amount of an active agent to a medium in which the virus is growing, said active agent being a compound of the formula

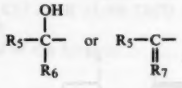


wherein

R_1 is hydrogen, C_1–C_3 alkyl, phenyl, or benzyl;

R_2 is hydrogen, or C_1–C_4 alkanoyl;

R_3 is at the 5 or 6 position and is 1-(C_1–C_3 alkyl)tetrazol-5-yl, 1,3-dithiolan-2-yl,



wherein R_5 is C_1–C_3 alkyl, C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl)methyl, 1-(C_3–C_7 cycloalkyl)ethyl, thienyl, or phenyl; R_6 is C_1–C_7 alkyl; R_7 is C_1–C_7 alkylidene; or

wherein R_4 is hydrogen, C_1–C_7 alkyl, C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl)methyl, 1-(C_3–C_7 cycloalkyl)ethyl, thienyl, or benzyl, phenyl or mono substituted phenyl wherein said substituents are selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl and Z is hydroxyimino, C_1–C_4 alkoxyimino, C_1–C_4 alkanoyloxyimino, hydrazono, α-methoxycarbonylhydrazono, α-hydroxycarbonylmethoxyhydrazono, ethoxycarbonylhydrazono, carbamylhydrazono or thiocarbamylhydrazono.

4,338,316

9-ARYLOXY PROSTANE DERIVATIVES

Peter R. Marsham, Poynton, England, assignor to Imperial Chemical Industries Limited, London, England

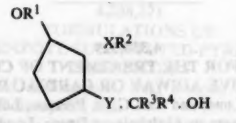
Filed Sep. 26, 1979, Ser. No. 79,176

Claims priority, application United Kingdom, Oct. 24, 1978, 41771/78

Int. Cl.[3] **C07C** *177/00;* **A61K** *31/557*

U.S. Cl. 424—250 **6 Claims**

1. A prostane derivative of the formula:



wherein:

R^1 is a phenyl or naphthyl radical optionally substituted by one or more halogen atoms, amino, carboxy, hydroxy, hydroxymethyl, nitro, phenyl or trifluoromethyl radicals, 1–4C alkyl, alkoxy, or alkanoylamino radicals, 2–5C alkoxycarbonyl or di(1–3C alkyl)amino radicals, or a pyridyl, quinolyl, indolyl, benzo[b]furanyl, benzo[b]thienyl, pyridazinyl, pyrimidinyl or pyrazinyl radical optionally substituted by one or more halogen atoms or 1–4C alkyl radicals;

X is a hexa-1,6-diyl, hex-2-en-1,6-diyl, hexa-2,5-dien-1,6-diyl, hexa-3,5-dien-1,6-diyl, hex-3-en-1,6-diyl or hex-5-trans-en-1,6-diyl radical, in each of which C-1 of the hexyl radical is bonded to the cyclopentane ring;

R^2 is a carboxy, hydroxymethyl, 5-indanyloxycarbonyl, 4-biphenylyloxycarbonyl or 5-tetrazolyl radical;

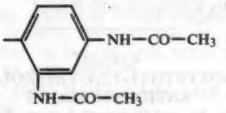
a radical of the formula —CO—NHR^5 wherein R^5 is a 2–8C alkanoyl radical, a 4–8C cycloalkanoyl radical, a 7–11C aroyl or substituted aroyl radical in which the substituent is a halogen atom or a methyl or methoxy radical, a 1–7C alkylsulphonyl radical or an arylsulphonyl or substituted arylsulphonyl radical in which the substituent is a halogen atom or a methyl or methoxy radical;

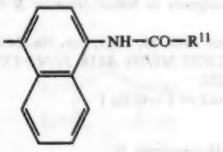
a radical of the formula —CO.OR^6 wherein R^6 is a 1–8C alkyl radical, a 4–8C cycloalkyl radical, a phenyl or substituted phenyl radical in which the substituent is 1 to 3 chlorine atoms or 1–4C alkyl radicals, or an ethyl radical substituted in the β-position by 1 to 3 chlorine, bromine or iodine atoms; a radical of the formula —CO.O.CHR^7.COR^8 wherein R^7 is a hydrogen atom or a benzyl radical and R^8 is a phenyl, 4-bromophenyl, 4-biphenylyl, 4-nitrophenyl, 4-benzamidophenyl or 2-naphthyl radical;

a radical of the formula —$CH_2O.CO(NH)_mR^9$ wherein m is 0 or 1 and R^9 is a 1–10C alkyl or halogenoalkyl radical, a 2–10C alkoxyalkyl radical, a ω-carboxy-1–6C-alkyl radical or a phenyl or naphthyl radical optionally substituted by one or more halogen atoms, nitro or phenyl radicals or 1–5C alkyl, alkoxy or halogenoalkyl radicals; or

a radical of the formula —$COOR^{10}$ wherein R^{10} is:

—W—NH—CO—CH_3
—W—NH—CO—Ph
—W—NH—CO—W—NH—CO—CH_3
—W—NH—CO—W—NH—CO—Ph
—W—NH—CO—NH_2
—W—Ph
—W—$C(Ph)_3$
—W—CH_2—$CH(CONH_2)$—NH—CO—CH_3
—W—CH_2—$CH(CONH_2)$—NH—CO—Ph
—W—CH=N—NH—CO—NH_2
—W—CO—CH_3
—W—CO—NH_2
—W—CO—NH—W—$C(Ph)_3$
—W—COO—CH_3
—W—OOC—Ph
—W—OOC—W—NH—CH_3





wherein W is a 1,4-phenylene radical and R^{11} is a methyl, phenyl or amino radical;

Y is an ethylene or trans-vinylene radical;

R^3 is a hydrogen atom or a 1–4C alkyl radical;

R^4 is a 3–8C alkyl radical;

a phenyl, benzyl, phenyl(2–4C alkyl), or phenylethynyl radical optionally substituted in the phenyl ring by one or

more halogen atoms, hydroxy, nitro or phenyl radicals, 1–4C alkyl, alkoxy, halogenoalkyl or alkanoylamino radicals, a 2–4C alkenyl or alkenyloxy radicals or di(1–3C alkyl)amino radicals;

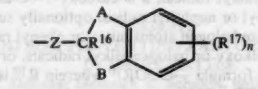
a radical of the formula $—CR^{12}R^{13}.OR^{14}$ wherein R^{12} and R^{13} are each a hydrogen atom or a 1–4C alkyl radical, and R^{14} is a 1–4C alkyl radical or a phenyl or naphthyl radical optionally substituted as defined immediately above;

a radical of the formula $—CR^{12}R^{13}OR^{15}$, wherein R^{12} and R^{13} have the meanings stated above, or a radical of the formula $—R^{15}$, wherein R^{15} is a radical which is derived from an aromatic 5-membered ring containing one, or two non-adjacent, nitrogen heteroatoms or one nitrogen and one non-adjacent sulphur heteroatoms, or an aromatic fused benzohomologue thereof, or an aromatic 6-membered ring containing one, or two non-adjacent, heteroatoms or a fused benzo-homologue thereof, or from indoline, pyridazine, benzo[b]furan, thiophen or benzo[b]thiophen, which radical is optionally substituted by one or more halogen atoms or 1–4C alkyl radicals;

a radical of the formula $—CR^{12}R^{13}.OR^{14}$ wherein $CR^{12}R^{13}$ together form a 4–6C cycloalkylene radical and R^{14} is a 1–4C alkyl radical or a phenyl or naphthyl radical as defined above; a 4–6C cycloalkyl radical bearing a 1-(2–7C alkyl) substituent; or

a radical of the formula:

II



is a direct bond or an alkylidene radical of 1 to 5 carbon atoms; either A is an alkylidene radical of 1 to 5 carbon atoms or an ethylene radical, and B is a direct bond, an oxygen or sulphur atom, or an alkylidene radical of 1 to 5 carbon atoms, or A is an oxygen atom and B is an oxygen atom, an alkylideneoxy radical of 1 to 5 carbon atoms wherein the oxygen atom is linked directly to the benzene ring, or an alkylidene(alkylimino) radical [alkylidene-N(alkyl)-] wherein the alkylidene radical is of 1 to 5 carbon atoms and the alkyl radical is of 1 to 4 carbon atoms, and wherein the nitrogen atom is linked directly to the benzene ring; R^{16} is a hydrogen atom or an alkyl radical of 1 to 4 carbon atoms, or CR^{16} together with an adjacent carbon atom of A or B forms a double bond; R^{17} is a halogen atom, or an alkyl, alkoxy or halogenoalkyl radical of 1 to 3 carbon atoms, and n is 0, 1 or 2;

and for those compounds which contain a carboxy radical, the pharmaceutically acceptable salts thereof.

4,338,317

PHENOXYETHYL-1,2,4,-TRIAZOL-3-ONE ANTIDEPRESSANTS

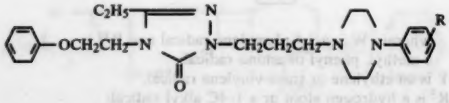
Davis L. Temple, Jr., and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Mar. 16, 1981, Ser. No. 244,464

Int. Cl.³ C07D *249/00*; A61K *31/41*; C07D *249/12*

U.S. Cl. 424—250 **9 Claims**

1. A compound of Formula I



wherein R is halogen or a pharmaceutically acceptable acid addition salt thereof.

7. The pharmaceutical composition comprising an antidepressant amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutically acceptable carrier.

4,338,318

NOVEL COMPOSITIONS AND METHODS

Clive A. Henrick; Jeffrey N. Labovitz, both of Palo Alto, Calif.; Roland T. V. Fox, Crowthorne, England; William G. Rathmell, Wokingham, England, and Margaret C. Shephard, Maidenhead, England, assignors to Zoecon Corporation and ICI Ltd., both of Palo Alto, Calif.

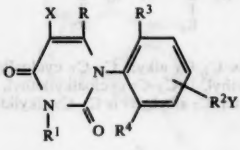
Division of Ser. No. 23,517, Mar. 23, 1979, Pat. No. 4,266,056, which is a continuation-in-part of Ser. No. 894,307, Apr. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 892,560, Apr. 3, 1978, abandoned. This application Jul. 18, 1980, Ser. No. 170,241

Int. Cl.³ A01N *43/54*

U.S. Cl. 424—251 **18 Claims**

1. A composition for the control of pathogenic diseases of plants which comprises a fungicially effective amount or a bacteriocidally effective amount of a compound of formula (A)

(A)



wherein,

each of R and R^1 is hydrogen, methyl or ethyl;

R^2 is lower alkyl, lower alkoxy, bromo, chloro, fluoro, lower haloalkyl, cyano, nitro, lower alkylthio, hydroxy, lower alkylcarbonyl, lower alkoxycarbonyl, lower haloalkoxy, cycloalkyl, cycloalkalkyl, lower haloalkylthio, lower alkenyl, or lower alkynyl;

R^3 is hydrogen or independently selected from the values of R^2;

R^4 is hydrogen or independently selected from the values of R^2; and

X is hydrogen, carbamoyl, or cyano; and

Y is zero, one, two or three, together with a suitable solid or liquid carrier; and provided that:

(a) when X is cyano, R is hydrogen, R^1 is hydrogen, R^2 is bromo, and Y is one—then either R^3 or R^4 is other than hydrogen;

(b) when R is hydrogen or methyl, y is zero; and each of R^3 and R^4 is hydrogen—then either X or R^1 is other than hydrogen; and

(c) when X is cyano, R is hydrogen, and R^1 is methyl—then either R^3 or R^4 is other than hydrogen, or y is one, two or three.

4,338,319

METHOD FOR THE TREATMENT OF CHRONIC OBSTRUCTIVE AIRWAY OR CARDIAC DISEASES

Per G. Kjellin, Lund, and Carl G. A. Persson, Löberöd, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

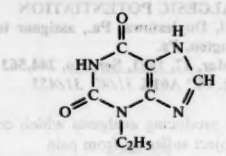
Filed Nov. 21, 1980, Ser. No. 209,007

Claims priority, application Sweden, Nov. 27, 1979, 7909780

Int. Cl.³ A61K *31/52*

U.S. Cl. 424—253 **3 Claims**

1. A method for the treatment of chronic obstructive airway disease treatable by theophylline therapy, characterized in administering to a host suffering therefrom a therapeutically active dose of a compound of the formula



4,338,320

ESTERS OF 6'-HYDROXYCINCHONINE, AND A METHOD OF TREATING ARRYTHMIA WITH THEM

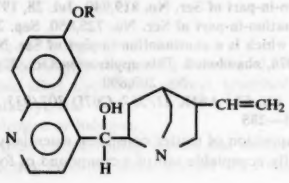
Harry Rosenberg, Omaha, and LaVerne D. Small, Lincoln, both of Nebr., assignors to The Board of Regents of the University of Nebraska, Nebr.

Filed Nov. 15, 1978, Ser. No. 960,934

Int. Cl.³ A61K *31/49*; C07D *453/04*

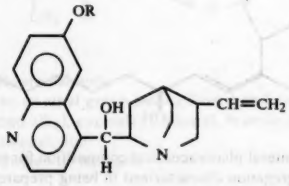
U.S. Cl. 424—259 **2 Claims**

1. A compound of the formula:



wherein R is benzoyl, isovaleryl, cinnamoyl or acetyl.

2. A method of treating arrhythmia comprising: administering to the subject an effective dose of a compound selected from the group comprising:



where R is benzoyl, isovaleryl, cinnamoyl or acetyl.

4,338,321

FORMULATIONS OF DIHALOBENZOYL-SUBSTITUTED-PYRIDINYLUREA INSECTICIDES

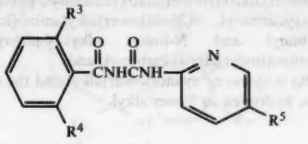
John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 114,770, Jan. 23, 1980, Pat. No. 4,281,003, which is a continuation-in-part of Ser. No. 938,723, Aug. 31, 1978, Pat. No. 4,219,557. This application Feb. 11, 1981, Ser. No. 233,429

Int. Cl.³ C07D *213/75*; A01N *43/40*

U.S. Cl. 424—263 **9 Claims**

1. A feed premix for the control of manure-breeding insects comprising an edible physiologically-acceptable feed premix carrier and from about 1 to about 400 g./lb. of a compound of the formula

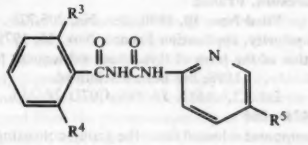


wherein

R^3 and R^4 independently represent chloro or fluoro;

R^5 is chloro, bromo or trifluoromethyl; provided that, when R^3 and R^4 are both chloro, R^5 is trifluoromethyl; or a physiologically-acceptable acid addition salt thereof.

4. A sustained release bolus for the control of manure-breeding insects comprising a polymeric substance and a compound of the formula



wherein R^3 and R^4 independently represent chloro or fluoro; R^5 is chloro, bromo or trifluoromethyl; provided that, when R^3 and R^4 are both chloro, R^5 is trifluoromethyl; or a physiologically-acceptable acid addition salt thereof, wherein the bolus releases from about 0.01 mg./day of the compound per kg. of body weight of the animal to which the bolus is administered, to about 2 mg./kg./day.

4,338,322

1,4-DIHYDROPYRIDINE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING SAME AND METHODS OF EFFECTING VASODILATION USING SAME

Yoshinari Sato, Takaishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

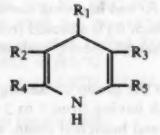
Division of Ser. No. 39,752, May 17, 1979, Pat. No. 4,284,634, which is a continuation-in-part of Ser. No. 809,788, Jun. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,994, Jul. 1, 1976, Pat. No. 4,145,432. This application Aug. 25, 1980, Ser. No. 180,905

Claims priority, application United Kingdom, Jul. 2, 1975, 27945/75; Sep. 29, 1975, 39854/75; Dec. 16, 1975, 51524/75; Apr. 5, 1976, 13761/76; Dec. 17, 1976, 52720/76; Jun. 6, 1978, 26429/78; Oct. 10, 1978, 39978/78

Int. Cl.³ C07D *213/55, 213/57*; A61K *31/455*

U.S. Cl. 424—266 **27 Claims**

1. A compound of the formula:



wherein

R_1 is unsubstituted phenyl or phenyl having one substituent selected from halogen, nitro, lower alkyl, halo(lower)alkyl, lower alkoxy, lower alkenyloxy, cyano, trifluoromethyl and lower alkoxycarbonyl or phenyl having two substituents selected from chloro-nitro, dihalo or dimethoxy,

R_2 and R_3 are each, same or different, esterified carboxy selected from lower alkoxycarbonyl, hydroxy(lower)al-

koxycarbonyl, lower alkoxy(lower)alkoxycarbonyl, phenyl(lower)alkoxy(lower)alkoxycarbonyl, phenoxy(lower-)alkoxycarbonyl, N,N-di(lower)alkylamino(lower)alkoxycarbonyl and N-lower alkyl-N-phenyl(lower)alkylamino(lower)alkoxycarbonyl, and

R_4 or R_5 is cyano or cyano(lower)alkyl and the other is the same, hydrogen or lower alkyl.

4,338,323

PIPERIDYLBENZIMIDAZOLINONE DERIVATIVES

Gilbert Regnier, Chatenay Malabry; Alain Dhainaut, Gennevilliers, and Jacques Duhault, Croissy, Michelle Boulanger, Marly-le-Roi, all of France, assignors to Science Union et Cie, Suresnes, France

Filed Nov. 10, 1980, Ser. No. 205,725

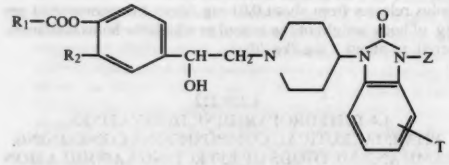
Claims priority, application France, Nov. 15, 1979, 79 28162

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.[3] A61K *31/445;* C07D *211/58*

U.S. Cl. 424—266 9 Claims

1. A compound selected from the group consisting of: piperidylbenzimidazolinone derivatives of the formula:



in which:

R_1 is selected from the group consisting of:

. alkyl having from 1 to 6 carbon atoms inclusive in straight and branched chain,

unsubstituted phenyl and phenyl mono- and poly-substituted by a substituent selected from the group consisting of halogen, alkyl and alkoxy each having from 1 to 5 carbon atoms inclusive, methylenedioxy, and ethylenedioxy, and

. thienyl, furyl, and pyridyl;

R_2 is selected from the group consisting of:

. R'_1—COO— and R'_1—COO—CH_2— in which R'_1 is a substituent selected from the meanings here-above given for R_1, R_1 and R'_1 being the same or different, and

. R_3—NH— in which R_3 is selected from the group consisting of formyl, acetyl, mesyl, carbamoyl, sulfamoyl, and ethoxalyl;

Z is selected from the group consisting of hydrogen, alkyl, and alkenyl each having from 1 to 5 carbon atoms inclusive in straight and branched chain, and

T is selected from the group consisting of hydrogen, halogen, alkyl and alkoxy each having from 1 to 5 carbon atoms inclusive in straight and branched chain; and

physiologically tolerable acid addition salts thereof.

9. A method for treating a living animal body afflicted with autoimmune, allergic or antiinflammatory diseases, asthmatic dyspnea or chronic bronchitis, comprising the step of administering an amount of a compound of claim 1 which is effective for the alleviation of the said condition.

4,338,324

ANALGESIC POTENTIATION

Joseph F. Gardocki, Doylestown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Mar. 17, 1981, Ser. No. 244,562

Int. Cl.[3] A61K *31/40, 31/455*

U.S. Cl. 424—266 7 Claims

1. A method for producing analgesia which comprises administering to a subject suffering from pain

(1) as a primary agent from about 0.140 to 1.43 mg/kg of body weight of zomepirac or a pharmaceutically acceptable salt thereof, and

(2) as potentiating agent from about 0.0028 to 0.029 mg/kg of body weight of butorphanol or a pharmaceutically acceptable salt thereof,

said primary agent being administered orally, and said potentiating agent being administered parenterally, either simultaneously or sequentially.

4,338,325

PGI_2 PHARMACOLOGICALLY ACCEPTABLE SALTS

Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

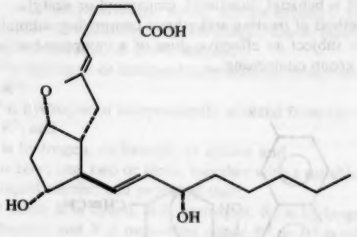
Continuation-in-part of Ser. No. 819,940, Jul. 28, 1977, which is a continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Oct. 27, 1980, Ser. No. 200,690

Int. Cl.[3] A61K *31/557;* C07D *307/935*

U.S. Cl. 424—285 6 Claims

1. A composition of matter consisting essentially of a pharmacologically acceptable salt of a compound of formula I

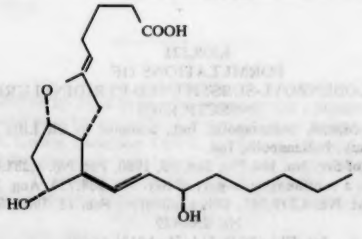
I



6. A parenteral pharmaceutical composition for inhibition of platelet aggregation characterized in being prepared from

(1) a free flowing powder form of the sodium salt of PGI_2, a compound of formula I

I



and

(2) a conventional pharmaceutical diluent for parenteral formulations, such that the sodium salt of PGI_2 is present in said composition at a concentration sufficient to inhibit platelet aggregation upon administration of a said compo-

sition in a predetermined volume or at a predetermined rate.

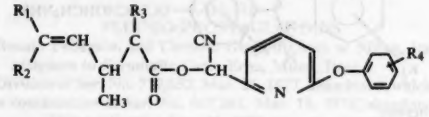
4,338,326

PHENOXYPYRIDINEMETHYL ESTERS OF 4-ALKENOIC ACIDS

Paul A. Cain, Dunbar, and Thomas N. Wheeler, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 27, 1979, Ser. No. 97,782
Int. Cl.³ A01N *43/40*; C07D *213/55, 213/57*
U.S. Cl. 424—267 **12 Claims**

1. A compound of the formula:



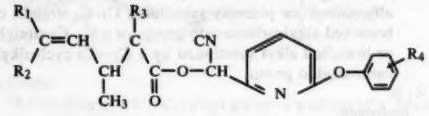
wherein

R_1 and R_2 are halogen;

R_3 may be an alkyl group having from 1 to 5 carbon atoms, branched alkyl, cycloalkyl, alkenyl, branched alkenyl, or cycloalkenyl; and

R_4 is hydrogen or halogen.

9. A method of controlling insects and mites which comprises subjecting them to a lethal amount of a compound of the formula:



wherein

R_1 and R_2 are halogen;

R_3 may be an alkyl group having from 1 to 5 carbon atoms, branched alkyl, cycloalkyl, alkenyl, branched alkenyl, or cycloalkenyl; and

R_4 is hydrogen or halogen.

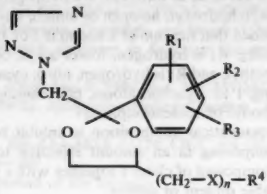
4,338,327

SUBSTITUTED 1-(2-ARYL-1,3-DIOXOLAN-2-YLMETHYL)-1H-1,2,4-TRIAZOLES

Jan Heeres, Vosselaar; Leo Backx, Arendonk, both of Belgium; Adolf Hubele, Magden, and Robert Nyfeler, Basel, both of Switzerland, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 949,329, Oct. 6, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,640
Int. Cl.³ C07D *405/06*; A61K *31/40*
U.S. Cl. 424—269 **11 Claims**

11. A composition for combatting a fungus comprising an inert carrier material and as an active ingredient an effective amount of a compound selected from the group consisting of a 1H-1,2,4-triazole derivative having the formula:



and the phytopharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein;

R^1, R^2 and R^3 are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkyloxy, halo, nitro, cyano and trifluoromethyl;

n is the integer 0 or 1;

X is a member selected from the group consisting of O and S; and

R^4 is a member selected from the group consisting of alkyl, mono-, di- and trihalo-alkyl, lower alkyloxy-lower alkyl, mono-, di- and trihalo-lower alkyloxy-lower alkyl, lower alkenyl, 2-propynyl, 3-halo-2-propynyl, cycloalkyl, aryl, aryl-lower alkyl and aryllower alkenyl, wherein said aryl is selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of lower alkyl, lower alkyloxy, halo, nitro, cyano, trifluoromethyl, phenyl, phenyloxy and phenylthio, provided that only one of the substituents may be selected from the group consisting of phenyl, phenyloxy and phenylthio, and wherein said phenyl and the phenyl part of said phenoxy and phenylthio are optionally substituted with up to three substituents each independently selected from the group consisting of lower alkyl, lower alkyloxy, halo, nitro, cyano and trifluoromethyl, provided that when n is 0 then R^4 is other than alkyl, and wherein said alkyl, used as such or as part of another substituent, is selected from straight and branched hydrocarbon radicals having from 1 to 12 carbon atoms and said cycloalkyl is selected from cyclopropyl, cyclobutyl, cyclopentyl, and cyclohexyl.

4,338,328

SULPHOXIDES OF HETEROCYCLICTHIOALKYLTHIOUREAS, UREAS AND GUANIDINES

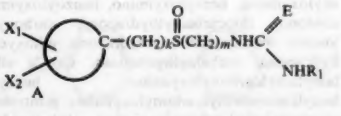
George R. White, Harpenden, England, assignor to SmithKline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 960,364, Nov. 13, 1978, Pat. No. 4,255,425, which is a division of Ser. No. 824,121, Aug. 12, 1977, Pat. No. 4,140,783, which is a division of Ser. No. 689,013, May 24, 1976, Pat. No. 4,056,620, which is a division of Ser. No. 627,41 8, Oct. 30, 1975, Pat. No. 3,979,398, which is a division of Ser. No. 436,285, Jan. 24, 1974, Pat. No. 3,932,443. This application Oct. 16, 1980, Ser. No. 197,430

Claims priority, application United Kingdom, Feb. 8, 1973, 6153/73; Oct. 23, 1973, 49257/73

Int. Cl.³ A61K *31/41*; C07D *231/12, 249/08, 285/12*
U.S. Cl. 424—269 **7 Claims**

1. A compound of the formula:



wherein A is such that the heterocyclic nucleus formed is a

pyrazole, 1,2,4-triazole or 1,3,4-thiadiazole ring; X_1 and X_2, which may be the same or different, are hydrogen, lower alkyl, trifluoromethyl, hydroxyl, halogen or amino; k is 0 to 2 and m is 2 or 3 provided that the sum of k and m is 3 or 4; E is oxygen, sulphur or NR_2; R_1 is hydrogen, lower alkyl, benzoyl or dimethylaminoethyl; and R_2 is hydrogen, nitro, cyano, alkanesulphonyl having 1 to 3 carbon atoms, benzenesulphonyl, halobenzenesulphonyl or toluenesulphonyl.

7. A pharmaceutical composition to inhibit histamine H-2 receptors comprising in an amount effective to inhibit said receptors a compound of claim 1 together with a pharmaceutically acceptable diluent or carrier.

4,338,329

ANTIVIRAL METHOD EMPLOYING 1-SULFONYLBENZIMIDAZOLES

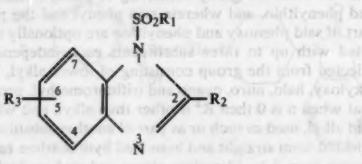
Charles J. Paget; James W., both of Chamberlin, Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 94,149, Nov. 14, 1979, Pat. No. 4,289,782, which is a division of Ser. No. 30,782, Apr. 17, 1979, Pat. No. 4,230,868, which is a division of Ser. No. 883,113, Mar. 3, 1978, Pat. No. 4,174,454, which is a division of Ser. No. 750,991, Dec. 15, 1976, Pat. No. 4,118,742, which is a continuation-in-part of Ser. No. 608,415, Aug. 28, 1975, abandoned. This application Apr. 20, 1981, Ser. No. 255,574

Int. Cl.³ A61K *31/415, 31/42, 31/425;* **A01N** *43/52*

U.S. Cl. 424—270 **21 Claims**

1. A method of suppressing the growth of a virus which comprises adding to a medium in which the virus is growing an antivirally effective amount of a compound of the formula



wherein:

R_1 is thiazol-2-yl, 2-acetamido-4-methylthiazol-5-yl, 1,3,4-thiadiazol-2-yl, 2-methyl-1,3,4-thiadiazol-5-yl, or 2-methylamino-1,3,4-thiadiazol-5-yl;

R_2 is amino, formamido, acetamido, propionamido or butyramido;

R_3 is hydroxy, C_2–C_8 alkanoyloxy, phenylacetoxy, α-C_1–C_7 alkyl-α-hydroxybenzyl or benzoyloxy; or 1,3-dithiolan-2-yl, 1,3-dithian-2-yl, tetrazol-5-yl, 1-(C_1–C_4 alkyl) tetrazol-5-yl, 1,3,4-oxoadiazol-2-yl, or 2-(C_1–C_4 alkyl)oxadiazol-5-yl; or

wherein

R_6 is hydrogen, C_1–C_7 alkyl,

C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl) methyl,

1-(C_3–C_7 cycloalkyl) ethyl, benzyl, phenyl or phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl; or Z=C(R_6)—, wherein Z is hydroxyimino, C_1–C_4 alkoxyimino, C_1–C_4 acyloxyimino, benzyloxyimino, benzoyloxyimino, hydrazono, thiocarbamylhydrazono, carboxymethoxyimino, methoxycarbonylhydrazono, ethoxycarbonylhydrazono, carbamylhydrazono, C_1–C_4 alkoxycarbonylethylcarbonyloxyimino, benzyloxycarbonylaminomethylcarbonyloxyimino, p-nitrobenzyloxycarbonylethylcarbonyloxyimino, phthalimidomethylcarbonyloxyimino, 2-(2-benzyloxycarbonyl-5-oxoisoxazolidin-4-yl)ethylcarbonyloxyimino or C_1–C_7 alkylidene; and

R_3 is at the 5 or 6 position.

4,338,330

BENZIMIDAZOLE DERIVATIVES, THEIR USE, AND COMPOSITIONS CONTAINING THESE DERIVATIVES

Claude L. Gillet, Blanmont; Joseph L. Roba, Dion-Le-Val; Michel Snyers, Brussels; William R. Van Dorsser, Brussels, and Georges E. Lambelin, Brussels, all of Belgium, assignors to Continental Pharma, Brussels, Belgium

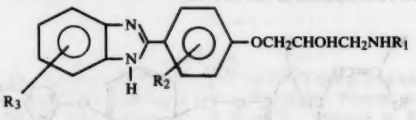
Filed Apr. 30, 1980, Ser. No. 145,144

Claims priority, application Luxembourg, May 4, 1979, 81225

Int. Cl.³ A61K *31/415;* **C07D** *235/18, 405/12*

U.S. Cl. 424—273 B **13 Claims**

1. A benzimidazole derivative of the formula:



wherein:

R_1 is a:

C_1–C_{18} straight or branched alkyl,

C_3–C_8 cycloalkyl,

C_1–C_5 straight or branched alkyl substituted by one or two phenyl, phenoxy, phenylthio, phenylsulfinyl groups, a

C_1–C_4 straight or branched alkyl, C_1–C_4 straight or branched alkoxy, methylenedioxy or halogen-substituted phenyl, phenoxy, phenylthio or phenylsulfinyl group,

C_1–C_5 straight or branched alkyl substituted by an optionally phenyl- or phenoxy substituted C_1–C_6 straight or branched alkylcarboxamido group, or a C_1–C_5 straight or branched alkyl substituted by a C_3—C_8 cycloalkylcarboxamido group;

R_2 is:

hydrogen,

one or two C_1–C_4 straight or branched alkyl groups,

one or two C_1–C_4 straight or branched alkoxy groups,

one or two halogen atoms;

R_3 is:

hydrogen,

one or two C_1–C_4 straight or branched alkyl groups,

one or two C_1–C_4 straight or branched alkoxy groups,

one or two halogen or nitro groups, and the esters derived from aliphatic carboxylic acids having up to 20 carbon atoms or from aromatic carboxylic acids comprising up to 10 carbon atoms, or the acid addition salts thereof with a non-toxic pharmaceutically acceptable acid.

11. A method of treating hypertension comprising administering to a subject in need of same an effective amount of a compound of claim 1.

4,338,331

ISOINDOLINE DERIVATIVE AND A THERAPEUTIC COMPOSITION THEREOF

Juan B. A. Scalesciani, Buenos Aires, Argentina, assignor to Farmatis S.p.A., Milan, Italy

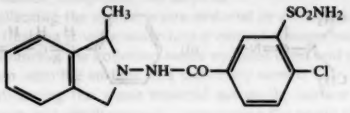
Division of Ser. No. 129,332, Mar. 11, 1980. This application Jan. 9, 1981, Ser. No. 223,798

Claims priority, application Italy, Mar. 15, 1979, 20991 A/79

Int. Cl.³ A61K *31/40;* **C07D** *209/44*

U.S. Cl. 424—274 **2 Claims**

1. 1-methyl-2-(3'-sulphamyl-4-chlorobenzamido)-isoindoline of formula

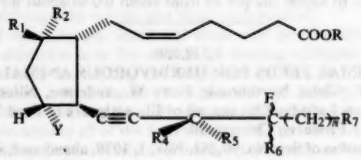


4,338,332
FLUORO-PROSTAGLANDINS

Renato Pellegata, and Carmelo Gandolfi, both of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

Division of Ser. No. 779,632, Mar. 21, 1977, abandoned, which is a continuation of Ser. No. 667,261, Mar. 15, 1976, abandoned. This application Sep. 21, 1978, Ser. No. 944,614
Claims priority, application Italy, Mar. 21, 1975, 21493 A/75
Int. Cl.³ C07C *177/00;* A61K *31/557*
U.S. Cl. 424—305 12 Claims

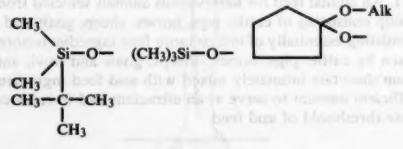
1. A compound of the formula:

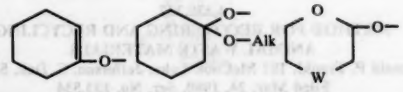


wherein:

R is hydrogen, a C_1–C_{12} alkyl group or a cation of a pharmaceutically acceptable base; one of R_1 and R_2 is hydrogen and the other is hydroxy or an alkanoyloxy group containing up to 6 carbon atoms, a benzoyloxy or a p-phenylbenzoyloxy group, or R_1 and R_2 taken together from an oxo group;

Y is an ether protecting group selected from:





wherein

W is —O— or —CH_2— and Alk is lower alkyl;

one of R_4 and R_5 is a protecting group as defined in Y and the other is hydrogen;

R_6 is hydrogen or fluorine;

n is zero or an integer of 1 to 6; and

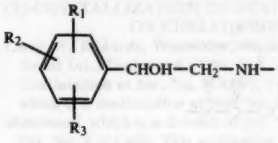
R_7 is methyl.

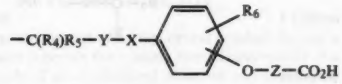
4,338,333
ETHANAMINE DERIVATIVES THEIR PREPARATION AND USE IN PHARMACEUTICAL COMPOSITIONS

Anthony T. Ainsworth, Cranleigh, and David G. Smith, Redhill, both of England, assignors to Beecham Group Limited, England

Filed Jun. 9, 1980, Ser. No. 157,555
Claims priority, application United Kingdom, Jun. 16, 1979, 7921038
Int. Cl.³ A61K *31/24;* C07C *101/30*
U.S. Cl. 424—309 16 Claims

1. A compound of the formula





or a pharmaceutically acceptable salt, ester or amide thereof, in which R_1 is a hydrogen, fluoro, chloro, bromo, hydroxy, hydroxymethyl, methyl, methoxyl, amino, formamido, acetamido, methylsulphonylamido, nitro, benzyloxy, methylsulphonylmethyl, ureido, trifluoromethyl or p-methoxybenzylamino; R_2 is hydrogen, fluoro, chloro bromo or, hydroxy; R_3 is hydrogen, chloro bromo or hydroxy, R_4 is hydrogen or methyl; R_5 is hydrogen or methyl; R_6 is hydrogen, fluoro chloro, methyl, methoxyl or hydroxy; X is an oxygen atom or a carbon-carbon bond; Y is alkylene of up to 6 carbon atoms or a bond; and Z is alkylene, alkenylene or alkynylene of up to 10 carbon atoms.

13. An antiobesity pharmaceutical composition comprising an effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

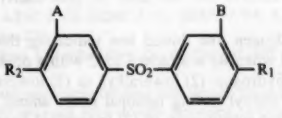
16. A method of treating obesity or hyperglycaemia in human or non-human animals which comprises administering to the animals an effective amount of a compound according to claim 1.

4,338,334
1-[4-(4-SULFANILYL)PHENYL] UREA AND DERIVATIVES IN COMPOSITIONS AND METHODS OF TREATING RHEUMATOID ARTHRITIS AND IMMUNE COMPLEX DISEASES

Norman P. Jensen, New Providence; David P. Jacobus, Princeton, and Howard Jones, Holmdel, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 865,560, Dec. 29, 1977, abandoned. This application Feb. 29, 1980, Ser. No. 126,045
Int. Cl.³ A61K *31/16, 31/17, 31/275, 31/655*
U.S. Cl. 424—322 6 Claims

1. A method of treating rheumatoid arthritis comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:



wherein:

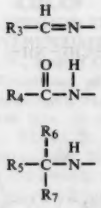
A and B are hydrogen or fluoro, provided that A and B may not both be fluoro;

R_1 is loweralkanoylamino, loweralkoxycarbamoyl, nitro or ureido; and

R_2 is selected from the group consisting of loweralkanoylamino, loweralkoxycarbonylamino, loweralkyl and nitro, and when R_1 is ureido, R_2 is additionally selected from the group consisting of

(a) amino;

(b) a substituted amino moiety having the following structure:

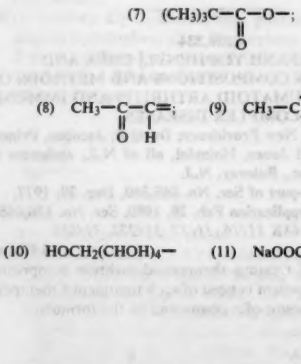


wherein:

R_3 is (1) a phenyl group; optionally substituted with (i) chloro; (ii) hydroxy and loweralkoxy; (iii) hydroxy and chloro; or (iv) hydroxy substituent; or (2) a branched alkyl group having 3–9 carbon atoms;

R_4 is (1) hydrogen; (2) amino; (3) cycloalkyl having 3–9 carbon atoms; (4) halomethyl, said halomethyl having a methyl group having one, two, or three halogens, said halogens being the same or different and being chloro, bromo, fluoro, or iodo; (5) haloethyl, said haloethyl having 1–5 halogen atoms, being the same or different; (6) loweralkenyl; (7) a thioloweralkyl group having 1–6 carbon atoms; (8) an aminohydrocarbyl fragment; (9) a phenyl group having a carboxy, amino, or nitro substituent; or (10) 2-carboxyethyl;

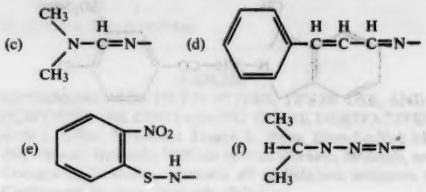
R_5 is selected from the group consisting of (1) hydrogen; (2) loweralkyl; (3) branched alkyl; (4) -amino R_3; (5) $NaSO_2$—; (6) R_8SO_2—;



R_6 is hydrogen, the dotted line indicating that R_6 is not present when R_5 is attached to C with a double bond;

R_7 is (1) hydrogen; (2) loweralkyl; or (3) loweralkoxy;

R_8 is (1) phenyl having optional nitro, amino, methyl, or acetamido substituents; or (2) loweralkyl having 1–6 carbon atoms;



4,338,335

VACCINE STABILIZER CONTAINING L-GLUTAMIC ACID AND L-ARGININE

William J. McAleer, Ambler, and Henry Z. Markus, Wyncote, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 118,703, Feb. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 89,068, Oct. 29, 1979, abandoned. This application Jul. 30, 1980, Ser. No. 173,534

Int. Cl.[3] **A61K** *39/12, 39/165, 39/13, 39/245*

U.S. Cl. 424—361 **4 Claims**

1. A stabilizer for a liquid vaccine consisting essentially of on a parts by weight basis from about 1.5 to about 2.1 parts partially hydrolyzed gelatin having a molecular weight of about 3,000, from about 7.0 to about 13.0 parts of sorbitol, sucrose, lactose or maltose, from about 0.4 to about 0.6 parts of an in vitro cell culture medium, from about 0.35 to about 0.7 part L-glutamic acid, from about 0.75 to about 1.3 parts L-arginine, and an amount of a physiologically acceptable acidic buffer effective to adjust the pH to from about 6.0 to about 6.5.

4,338,336

ANIMAL FEEDS FOR HERBIVOROUS ANIMALS

Elmer F. Glabe, Northbrook; Perry W. Anderson, Niles, and Stergios Lafsidis, Chicago, all of Ill., assignors to Food Technology Products, Chicago, Ill.

Continuation of Ser. No. 90,241, Nov. 1, 1979, abandoned, which is a continuation of Ser. No. 841,913, Oct. 13, 1977, abandoned, which is a continuation of Ser. No. 630,697, Nov. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 484,080, Jun. 28, 1978, Pat. No. 3,925,559, which is a continuation-in-part of Ser. No. 300,736, Oct. 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 158,616, Jun. 30, 1971, abandoned. This application Jul. 27, 1981, Ser. No. 287,198

The portion of the term of this patent subsequent to Dec. 9, 1992, has been disclaimed.

Int. Cl.[3] **A23K** *1/14, 1/10*

U.S. Cl. 426—1 **14 Claims**

1. An animal feed for herbivorous animals selected from the group consisting of cattle, pigs, horses, sheep, goats and fowl consisting essentially of one or more feed ingredients normally eaten by cattle, pigs, horses, sheeps, goats and fowl, and sodium diacetate intimately mixed with said feed ingredients in sufficient amount to serve as an attractant and to enhance the taste threshhold of said feed.

4,338,337

METHOD FOR RECOVERING AND RECYCLING ANIMAL WASTE MATERIALS

Gerald P. Frankl, 187 McCook Lake, Jefferson, S. Dak. 57038

Filed Mar. 24, 1980, Ser. No. 133,534

Int. Cl.[3] **A23K** *1/00*

U.S. Cl. 426—55 **11 Claims**

1. In a system wherein animal waste material is recovered and converted into animal feed, and a screen having a coarser mesh size than the size of fines in the animal wastes is employed in the separation of the fines together with liquid from the waste material recovered while preventing clogging of the screen, the method of recycling the fines to prevent the loss of

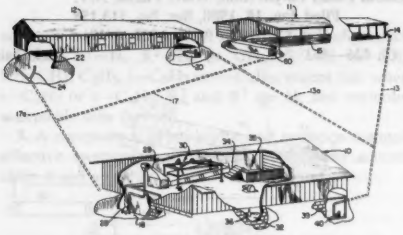
nutrient feed materials and of adding single cell protein into the animal wastes, comprising the steps of:

(1) collecting the animal waste material in a collection area by flushing it with water into a central storage basin;

(2) advancing the collected waste material from said storage basin onto the surface of a stationary screen;

(3) advancing the waste material across the surface of the screen and simultaneously compressing the waste material against the screen to selectively remove the fines therefrom;

(4) discharging the solid material remaining on the surface of the screen at one end of the screen opposite to that where loaded onto the screen;



(5) collecting the liquid and fines which pass through said screen and are separated from the waste material into a liquid storage means;

(6) aerating the liquid and fines sufficiently to hydrolyze essentially all of the fines in the liquids which have passed through the screen into single cell protein;

(7) returning the liquid and single cell protein back to the collection area for reusage in flushing additional animal wastes and adding the single cell protein into the additional animal wastes for collection and loading onto the surface of the stationary screen as herein recited whereby essentially all of the fines smaller than the mesh size of the screen are collected and single cell protein has been added in the form of nutrients into the feed material.

4,338,338

BEVERAGE STRAINERS

Opal L. Popkes, 25 E. Clearview Dr., Columbia, Mo. 65201

Filed Nov. 24, 1980, Ser. No. 209,990

Int. Cl.³ A47J *31/13;* B65B *29/02*

U.S. Cl. 426—82 **11 Claims**

1. A beverage strainer for an extractible dry beverage material such as tea or coffee, comprising, in combination:

a sheet of metal foil wrapped upon itself to provide an elongate, spoon-like hand manipulatable form,

said form having at one end thereof a hollow, sealed pouch in substantial cup form containing a a quantity of liquid extractible dry beverage material therein,

said pouch defined by at least one wall thickness of said foil sheet, and

at the other end thereof, an elongate grasping handle connected to and extending from said pouch,

said handle defined by said foil sheet wrapped upon itself in substantially closed, solid form,

the pouch having a plurality of openings through the walls thereof in a group to permit access of liquid to the extractible material and

means removably covering said openings to seal said pouch before use of said strainer.

4,338,339

CO-CRYSTALLIZATION OF DEXTROSE AND SUCROSE ON CEREAL PRODUCTS

Larry W. Edwards, Woodridge, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 118,697, Feb. 5, 1980, abandoned, which is a continuation of Ser. No. 888,707, Mar. 20, 1978, abandoned, which is a division of Ser. No. 756,931, Jan. 5, 1977, Pat. No. 4,101,680. This application Jun. 12, 1981, Ser. No. 272,869

Int. Cl.³ A23L *1/164, 1/18*

U.S. Cl. 426—96 **3 Claims**

1. A presweetened coated breakfast cereal product having a frosted appearance wherein the coating consists essentially of a thin, uniform layer of co-crystallized dextrose and sucrose.

4,338,340

EXTRUDED PROTEIN PRODUCT

Keisuke Morimoto, Congers; Brenton G. Edgar, White Plains, and Thomas J. Hirasuna, Yonkers, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,464

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—104 **21 Claims**

1. A process for producing texturized protein fibers comprising the steps of:

(a) preparing a solution of protein material and water having from about 10% to 60% solids, said solids containing from about 30% to about 100% heat-coagulable protein, and 40% to about 90% water by weight;

(b) denaturing the heat-coagulable protein in the solution formed in step (a), drying and forming a granulated powder of said protein;

(c) combining a minor amount of starch and a minor amount of an alkali metal sulfite with the protein-containing material of step (a) or (b), said amount of starch effective to control texture of the final product and the amount of alkali metal sulfite effective to control color and flavor of the final product;

(d) adjusting the moisture level of the protein/starch/sulfite mixture to about 20 to about 40% based on the total weight of the mixture; and

(e) extruding the moisturized mixture of step (d) in an extruder having a maximum temperature of at least about 140° C. to provide a cohesive extrudate having a fibrous texture.

4,338,341

STIFF DOUGH MAKE-UP MACHINE AND METHOD OF USING SAME

Earl Glass, Cincinnati, Ohio, assignor to AMF Incorporated, White Plains, N.Y.

Filed May 23, 1980, Ser. No. 152,903

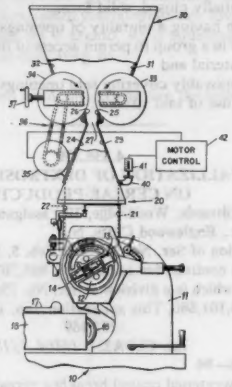
Int. Cl.³ A21C *5/04;* B29C *3/02;* G01N *3/08;* A21D *8/00*

U.S. Cl. 426—231 **8 Claims**

1. A method for enhancing the scaling of stiff dough comprising:

degassing and positively feeding stiff dough from an open feed hopper by moving said dough between two rotating feed rolls, through a closed pressure retaining hopper and to a

rotating sealing drum having plural through cylinders and a double-acting piston in each of said cylinders, sensing pressure in said closed hopper and controlling pressure in said closed hopper by varying the rotation speed of said two rolls



in response to the sensed pressure in said closed hopper and maintaining the minimum pressure in said closed hopper necessary to keep said dough in contact with said sealing drum.

4,338,342

SUCROSE ESTER TREATMENT OF BANANAS

Hong S. Tan, Bleiswijk, and Dirk A. Smink, Leiderdorp, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 852,037, Nov. 11, 1957, abandoned. This application Aug. 30, 1979, Ser. No. 71,273

Claims priority, application United Kingdom, Nov. 17, 1976, 47952/76

Int. Cl.³ A23B *7/16*

U.S. Cl. 426—308 **4 Claims**

1. A process for treating bananas to retard their ripening and to decrease their loss of moisture comprising contacting the bananas with an aqueous solution, suspension or emulsion consisting essentially of 0.2 to 5% by weight of at least one sucrose ester of higher fatty acids of 16 to 20 carbon atoms derived from a natural triglyceride by transesterification of the starting triglyceride with sucrose and mixed with 0.02–2% by weight of residual monoglyceride, 0.02–2% by weight of residual diglycerides and 0–2% by weight of residual triglycerides and optionally drying the fruits and vegetables before storage.

4,338,343

LIQUID ANTI-MICROBIAL TREATMENTS FOR STORAGE GRAIN WITH AMMONIUM BISULFITE AND A DISPROPORTIONATION PRODUCT THEREOF

Frederick D. Vidal, Englewood Cliffs, and Anantharaman Jayaraman, Nutley, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 156,501, Jun. 4, 1980, Pat. No. 4,309,451, and Ser. No. 38,739, May 14, 1979, abandoned, said Ser. No. 156,501, is a division of Ser. No. 50,162, Jun. 20, 1979, abandoned. This application Jun. 26, 1980, Ser. No. 163,413

Int. Cl.³ A23B *9/00*; A23L *3/34*

U.S. Cl. 426—331 **5 Claims**

1. A method of preserving moist grain to prevent spoilage thereof, comprising the steps of:

(a) providing an aqueous ammonium bisulfite solution;

(b) adding to said solution an amount of at least one ammonium bisulfite disproportionation product effective to improve the antimicrobial effect of said solution, to provide a preservative solution; and

(c) applying said preservative solution to said grain in amounts effective to prevent spoilage of grain.

4,338,344

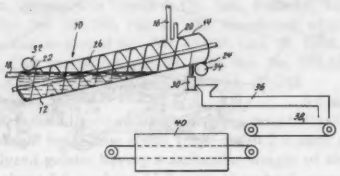
PROCESS FOR PRODUCING A QUICK-COOKING RICE

Arthur W. Brooks, Dover, Del.; Richard B. Stevenson, Englishtown, N.J., and Leonard Bell, Allston, Mass., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 18, 1980, Ser. No. 113,158

Int. Cl.³ A23B *9/00*; A23L *1/10*

U.S. Cl. 426—461 **24 Claims**



1. An improved method for preparing a quick-rehydrating, fully gelatinized rice from raw, parboiled, brown, wild, or milled white rice where the rice is introduced into a 175° F. to 230° F., pH between 3 and 7, water bath inside an inclined, enclosed chamber that is between 40 and 90% filled with water and the rice conveyed through the water bath from the bottom to the surface within a time range of 10 to 50 minutes, with the rice being continuously agitated while it is being conveyed through the chamber, and upon the rice being conveyed through the surface of the water, the rice enters a steam atmosphere, said steam atmosphere conditions being controlled by the temperature of the water bath, and the rice is conveyed through the steam atmosphere with agitation in from 1 to 30 minutes after which the rice is removed from the cooking chamber at a moisture between 30 and 75% and thereafter dried to a moisture of less than 12%.

4,338,345

SMOKED MEAT PRODUCTS WHICH INHIBIT THE GROWTH OF CLOSTRIDIUM BOTULINUM AND THE FORMATION OF ENTEROTOXIN

Joseph F. Jadlocki, Jr., Mount Holly, N.J., and John S. Thompson, Wayne, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 140,328, Apr. 14, 1980, Pat. No. 4,282,260. This application Jan. 30, 1981, Ser. No. 229,707

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ A23B *4/02*; A23L *1/31*

U.S. Cl. 426—532 **11 Claims**

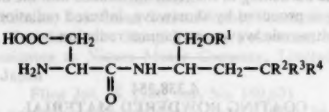
1. A smoked meat product which inhibits the growth of *Clostridium botulinum* and the production of enterotoxin during storage containing an alkali metal nitrite salt, in an amount less than 120 ppm, and from about 1,000 ppm to about 3,000 ppm of a compound selected from the group consisting of hypophosphorous acid, sodium hypophosphite, potassium hypophosphite, calcium hypophosphite and manganese hypophosphite.

4,338,346
NON-NUTRITIVE SWEETENER

Larry M. Brand, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 972,093, Dec. 21, 1978, abandoned.
This application Aug. 14, 1980, Ser. No. 178,231
Int. Cl.[3] A23L *1/236*
U.S. Cl. 426—548 8 Claims

1. A compound of the formula:



wherein said compound is in the L,L configuration; and wherein R^1=H, R^2=H or CH_3; R^3=H or CH_3; and R^4=CH_3, C_2H_5, i—C_3H_7 or t—C_4H_9; except that where R^4 is i—C_3H_7 or t—C_4H_9, R^2 and R^3 are H; and toxicologically acceptable salts thereof.

5. A composition of matter for oral ingestion comprising an effective sweetening amount of a compound according to claim 1 and a carrier.

4,338,347
POWDERED COMPOSITIONS FOR MOUSSE PRODUCTS

Moshe Trop, and Avinoam Livne, both of Beer Sheva, Israel, assignors to Ben-Gurion University of the Negev Research and Development Authority, Beer Sheva, Israel

Filed Sep. 24, 1980, Ser. No. 190,134
Claims priority, application Israel, Sep. 28, 1979, 58362
Int. Cl.[3] A23G *9/02*
U.S. Cl. 426—565 16 Claims

1. A powdered composition suitable for mixing with a liquid to obtain a mousse product, comprising, by weight proportions, about 30 to about 50 parts of a vegetable lipid whipping agent, about 5 to 15 parts milk powder, about 30–60 part sugar, about 3 to 10 parts of a texture stabilizer and about 0.05 to 10 parts flavor additives, wherein said lipid whipping agent comprises about 15 to 35% of sugar or corn syrup solids, about 6 to 11% sodium caseinate and about 50 to 70% of a lipid component, which lipid component comprises about 75 to 85% partially hydrogenated vegetable oil, about 10 to 12% lactylated fatty acid esters of glycerol and propylene glycol and about 8 to 10% of fatty acid mono or diglycerides or mixture of said mono and diglycerides.

4,338,348
ISOMERIZATION OF ALPHA ACIDS

Adam Müller, St. Johann, Hallertau, Fed. Rep. of Germany

PCT No. PCT/DE79/00058, § 371 Date Oct. 31, 1979, § 102(e) Date Oct. 31, 1979
PCT Filed Jun. 19, 1979, Ser. No. 194,120
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2827002; Jul. 4, 1978, 2829308; May 22, 1979, 2920765
Int. Cl.[3] C12C *3/00, 9/02;* A23L *1/221*
U.S. Cl. 426—600 14 Claims

1. A process for the isomerization of alpha acids contained in a hop extract which is obtained by extracting hops or hop products with liquid or fluid CO_2 or organic solvents which comprises mixing said extract with one or more adsorption agents selected from the group consisting of bentonite, fuller's earth and alkali and alkaline earth metal salts or oxides, treating the mixture so formed in a closed pressurized container with fluid CO_2 under a pressure of greater than 50 bars and at a temperature of greater than 33° C. whereby iso-alpha acids are formed with essentially no dissolving of the iso-alpha acids in the fluid CO_2 and removing from the pressurized container the iso-alpha-acids thus obtained as a dry substance.

4,338,349
REINCORPORATION OF COCOA AROMA

James G. Franklin, Morges, and Bernhard Rüttter, St. Erhard, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Aug. 12, 1980, Ser. No. 177,469
Int. Cl.[3] A23G *1/00*
U.S. Cl. 426—631 4 Claims

1. A process for producing an aromatized agglomerated cocoa mix which comprises the steps of:

(a) forming a ground cocoa powder mixture;

(b) spraying a dilute aqueous solution of cocoa aroma onto the mixture in an amount below that which would impair its free flowing properties, immediately prior to the next step of agglomeration means of steam or water; and then

(c) agglomerating the mixture by

(d) drying the agglomerated aromatized cocoa powder mixture.

4,338,350
CRYSTALLIZED, READILY WATER-DISPERSIBLE SUGAR PRODUCT

Andy C. C. Chen, Belle Mead, N.J.; Clifford E. Lang, Jr.; Charles P. Graham, both of Hicksville, N.Y., and Anthony B. Rizzuto, Piscataway, N.J., assignors to Amstar Corporation, New York, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,551
Int. Cl.[3] C13F *1/02;* A23G *1/00;* A23F *1/00;* A23G *1/187*
U.S. Cl. 426—658 37 Claims

1. A method for preparing a crystallized sugar product containing a food ingredient, comprising:

(a) concentrating a sugar syrup at a temperature in the range of about 250° F. to about 300° F. to a solids content of about 90% to 98% by weight, said sugar syrup containing no more than about 20% by weight of non-sucrose solids;

(b) admixing the concentrated sugar syrup with a predetermined amount of the food ingredient;

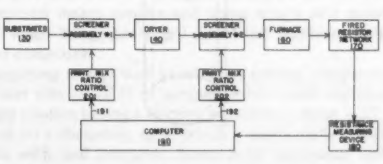
(c) subjecting the admixture to impact bearing within a crystallization zone until a crystallized sugar product is formed, said crystallized sugar product made up of aggregates of fondant-size sucrose crystals and the food ingredient and having a moisture content of less than 2.5% by weight; and

(d) recovering said crystallized sugar product from said crystallization zone.

4,338,351
APPARATUS AND METHOD FOR PRODUCING UNIFORM FIRED RESISTORS

Terry R. Bloom, Middlebury, and Marion E. Ellis, Decatur, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Sep. 10, 1980, Ser. No. 185,757
Int. Cl.[3] H01C *17/06*
U.S. Cl. 427—8 21 Claims



11. A process for blending resistive materials and applying said blend onto substrates, comprising the steps of continuously supplying substrates to a means for applying said blend of resistive materials to said substrates, said applying means including a means for mixing at least two resistive materials, supplying at least two resistive materials to the means for mixing said resistive materials, mixing said resistive materials

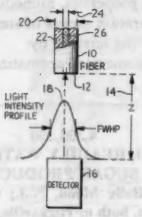
to disperse one material in another, and applying the mixture onto each of said substrates.

4,338,352

PROCESS FOR PRODUCING GUIDED WAVE LENS ON OPTICAL FIBERS

Philip D. Bear, Godfrey, Ill., and Gordon H. Burkhart, Florissant, Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 23, 1981, Ser. No. 236,835
Int. Cl.³ G02B *5/14, 3/00;* B05D *1/18*
U.S. Cl. 427—8 **11 Claims**



1. A process for use in an environment subjected to an acceleration force such as gravity for producing a lens on the first end of an optical fiber having first and second ends including the steps of:

a. coupling light into the second end of the fiber;

b. dipping the first end of the fiber into negative photoresist;

c. maintaining the fiber in a position with the first end oriented toward the acceleration force until the photoresist dries; and

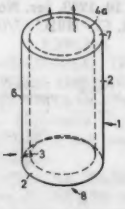
d. repeating steps (b.) and (c.) until the desired lens is formed.

4,338,353

METHOD FOR INCREASING THE STRENGTH OF A POROUS BODY

Bernd Melchior, Remscheid, Fed. Rep. of Germany, assignor to Imchemie Kunststoff GmbH, Wermelskirchen, Fed. Rep. of Germany

Continuation of Ser. No. 66,435, Aug. 14, 1979, abandoned. This application Jan. 2, 1981, Ser. No. 222,088
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726117
Int. Cl.³ B05D *1/18, 3/00, 3/06, 3/12*
U.S. Cl. 427—36 **18 Claims**



1. A method of increasing the strength of a porous body and its resistance to weathering comprising impregnating a portion of the outer layer of a porous body with an impregnating liquid that includes a hardenable resin and hardener to, upon the liquid hardening, form a sealed vessel-like packing, hardening the impregnating liquid in the outer layer, thereafter completely impregnating the interior of the body with an impregnating liquid that includes a hardenable resin and hardener and hardening the impregnating liquid in the body interior.

2. The method according to claim 1, characterized in that, after impregnation and hardening of the liquid in the outer layer, at least one inlet for the hardenable liquid and/or at least one outlet for the gases and liquids issuing from the body are provided in said outer layer.

11. The method according to claim 2, 3, or 4, characterized in that the hardening of the resin introduced into the interior of the body is procured by shortwave, infrared radiation, microwaves, ultrasonic waves, or gamma radiation.

4,338,354

COATING POWDERED MATERIAL

Eric L. Bush, Matching Green, Nr. Harlow, and Ernest J. Workman, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 143,975
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—80 **6 Claims**

1. A process for depositing a substantially uniform layer of tantalum or niobium on a particulate insulating substrate, the process including: substantially completely nucleating said substrate by exposing at a predetermined temperature between 600° C. and 1400° C. the substrate to a gaseous mixture of tantalum or niobium halide and a nucleating agent selected from the group consisting of ammonia, an ammonium halide, a hydrazine-hydrohalide, a hydroxylamine-hydrohalide, nitrogen, a boron halide, a sulphur halide, a phosphorous halide, a silicon halide, a boron hydride, a sulphur hydride, a phosphorous hydride or a silicon hydride, wherein the substrate is exposed to said mixture for a predetermined time to provide substantially complete nucleation of said substrate with a uniform layer of tantalum or niobium containing material via an irreversible reaction; and depositing tantalum or niobium on said nucleated substrate by then exposing at a predetermined temperature said nucleated substrate to a gaseous mixture of tantalum or niobium halide and hydrogen without the presence of a nucleating agent for a predetermined period of time sufficient to deposit by a reversible reaction a layer of tantalum or niobium not exceeding an average of 0.3 microns in thickness.

4,338,355

PROCESS USING ACTIVATED ELECTROLESS PLATING CATALYSTS

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 105,865, Dec. 21, 1979, Pat. No. 4,273,804, which is a continuation-in-part of Ser. No. 820,904, Aug. 1, 1977, Pat. No. 4,131,699, which is a continuation of Ser. No. 625,326, Oct. 23, 1975, Pat. No. 4,048,354. This application May 20, 1981, Ser. No. 265,437
The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—98 **12 Claims**

1. A process for the metallization of a non-conductor substrate comprising the steps:

(1) etching said substrate,

(2) contacting said substrate with a colloidal dispersion comprising a non-noble catalytic metal wherein said catalytic metal may be part of an elemental state, an alloy, or a compound and mixtures thereof and wherein said metal is catalytic to electroless plating initiation in one of its oxidation states and further wherein said colloidal composition contains a colloid stabilizer which renders said catalytic composition stable towards separation but weakly active towards electroless plating initiation,

(3) contacting the treated substrate with a composition comprising a reactivity modifier thereby further activating the treated substrate for greater catalytic activity in the initiation of the electroless plating process, and further wherein

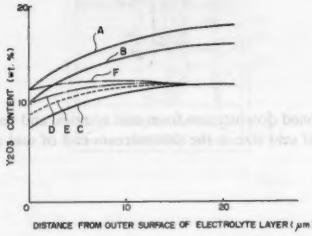
said reactivity modifier is also a colloid stabilizer but is not the same as said colloid stabilizer, and thereafter

(4) contacting the substrate with a compatible electroless plating bath to deposit the desired metal.

4,338,356
METHOD OF PRODUCING FLAT SOLID ELECTROLYTE LAYER OF FLAT FILM TYPE OXYGEN SENSOR

Yoshio Akimune, Yokohama; Satoshi Ambe, Yokosuka; Hiroshi Takao, Kamakura, and Shinji Kimura, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 15, 1980, Ser. No. 169,031
Claims priority, application Japan, Jul. 16, 1979, 54-89243
Int. Cl.³ B05D 5/12
U.S. Cl. 427—123 **14 Claims**



1. A method of producing a flat film type oxygen sensor including an oxygen ion conductive solid electrolyte layer, comprising the steps of:

(a) preparing an electrode layer which has been fired;

(b) preparing first and second electrolyte pastes each containing stabilizer, the amount of stabilizer in said first electrolyte paste being less than that in said second electrolyte paste;

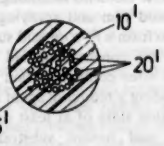
(c) applying said first electrolyte paste onto said electrode layer and then applying said second electrolyte paste onto the outer surface of said first electrolyte paste to form a layered paste heap on said electrode layer; and

(d) air drying and then firing said layered paste heap to form a solid electrolyte layer on said electrode layer.

4,338,357
METHOD OF COATING FIBROUS REINFORCEMENT MATERIAL

Herwig Pichler, Schwaz; Harald Helletsberger, Wattens; Ernst Geissler, Schwaz; Heinrich Ofer, Vomp, and Bernhard Fugenschuh, Rum, all of Austria, assignors to Tyrolit Schleifmittelwerke Swarovski K.G., Austria

Continuation-in-part of Ser. No. 96,246, Nov. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 943,352, Sep. 18, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,371
Claims priority, application Austria, Sep. 23, 1977, 6822/77
Int. Cl.³ B05D 1/36, 3/02
U.S. Cl. 427—195 **14 Claims**



1. A method of coating fibrous reinforcement material comprising at least one fiber having multifilaments for objects under high strain, said method comprising the steps of:

depositing on said fibrous material and between said multifilaments, by soaking said fibrous material in a solvent solution of curable thermo-setting resin, an amount of resin equal to 5 to 50% of the weight of the total quantity of the resin to be deposited on the fibrous material;

subsequently depositing on the wet fibrous material a powder comprising the remainder of the total quantity of thermo-setting resin which is soluble in the solvent on the fibrous material; and

heating the coated fibrous material until it reaches a temperature at least sufficient to obtain sintering of the resin and at which the fibrous material is partially cured and tacky;

the amount of solvent in said solution being sufficient so that the powder is fused by the solvent and at least 2% by weight of the solvent remains in the tacky fibrous material.

4,338,358
METHOD OF PRODUCING CUVETTES FOR THE FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

Bernhard Lersmacher, Aachen, Fed. Rep. of Germany; Ludovicus W. J. van Kollenburg, Eindhoven, Netherlands; Leonardus C. Bastings, deceased, late of Valkenswaard, Netherlands, and Friedrich J. de Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1979, Ser. No. 45,909
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825759
Int. Cl.³ B05D 3/02
U.S. Cl. 427—227 **8 Claims**

1. A method of producing cuvettes for flameless atomic absorption spectroscopy comprising the steps of placing a plurality of carbon substrate in a loose heap in a pyrolysis apparatus, effecting a plurality of separate coatings of pyrolytic graphite on said substrata until an overall thickness of 20–80 μm is applied, and redistributing said plurality of carbon substrata in said apparatus between each coating of pyrolytic graphite.

4,338,359
METHOD OF FACILITATING LOW TEMPERATURE DISCHARGE FROM A CONTAINER OF PARTICULATE MATERIAL

Mark O. Kestner, Mendham, N.J., assignor to Apollo Technologies, Inc., Whippany, N.J.

Filed Mar. 16, 1981, Ser. No. 243,752
Int. Cl.³ B05D 7/22, 5/08
U.S. Cl. 427—230 **11 Claims**

1. The method of facilitating low temperature discharge of particulate material from a container having a wall with which said material makes contact and along which said material moves when being discharged from said container, which method comprises:

(a) applying to said wall an adherent coating comprising a water solution of (i) an inorganic freeze point depressant, said solution having a freezing point below about −20° C., and (ii) a thickening agent which is substantially compatible with said inorganic freeze point depressant and is present in an amount sufficient to produce in said solution a viscosity range in centipoise between about 50 and 1,500 at 70° F. and between about 500 and 20,000 at 0° F.,

(b) putting said material into said container to make contact with said wall, and

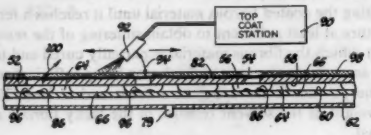
(c) when desired, discharging said material from said container, in the course of which said material moves along said wall.

4,338,360

METHOD FOR COATING POROUS METAL STRUCTURE

John R. Cavanagh, Brownsburg; Kenneth R. Cross, Lebanon; David L. Clingman, Carmel, and Berton Schechter, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 1, 1980, Ser. No. 145,594
Int. Cl.³ B05D 5/00
U.S. Cl. 427—247 4 Claims



1. A method for coating a heat resistant ceramic composition material on an exposed surface of an air cooled porous metal laminate having air flow exit holes therefrom formed in part by an internal surface of the laminate exposed in part through said exit holes comprising the steps of: roughening the exposed surface; backflowing inert gas through the laminate for exit through the exit holes continuously during the following steps of the process; directing a bond coat spray toward said exposed surface at a slant angle from an axis normal to the roughened exposed surface so as to coat a thin bond coat layer on all of the exposed surface and on a portion of the internal surface exposed through each exit hole at the slant angle of the directed bond coat; and thereafter directing a top coat spray of a ceramic coat requiring a bond coat layer thereunder for adhesion toward said exposed surface at a slant angle from said normal axis so as to coat all of said exposed surface with said top coat and a portion of the internal surface exposed through each exit hole at the slant angle of the directed top coat spray, the direction from which said top coat is sprayed being different than the direction from which said bond coat is sprayed so that the ceramic top coat is directed against a portion of the internal surface having only a limited bond coat deposit thereon so as to reduce bonding of the ceramic top coat in the exit holes thereby to minimize plugging of said exit holes during coating of the exposed surface of the laminate with heat resistant ceramic composition material.

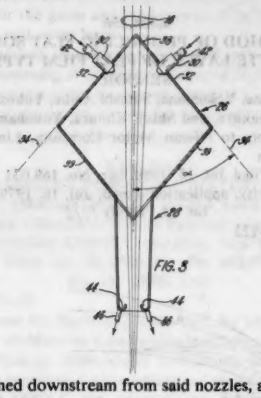
4,338,361

METHOD AND APPARATUS FOR APPLYING TEXTILE SIZES

Kingso C. Lin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 8, 1980, Ser. No. 213,966
Int. Cl.³ B05D 1/02
U.S. Cl. 427—299 7 Claims

7. The method for applying a size to a converging array of mineral fibers of the type in which the array of mineral fibers is directed between a pair of nozzles adapted to spray a size onto the array of mineral fibers, wherein the improvement comprises removing the entrained gases flowing with the array of fibers by passing the array of fibers through an opening in a stripper positioned immediately upstream from said nozzles, passing the array of fibers through a narrow, converging conduit positioned downstream from said nozzles, and recovering a portion of said size at the downstream end of said conduit.

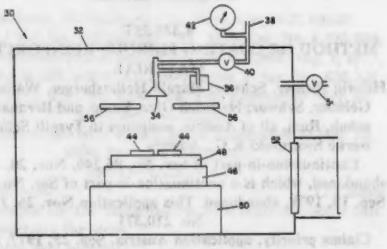


4,338,362

METHOD TO SYNTHESIZE AND PRODUCE THIN FILMS BY SPRAY PYROLYSIS

Richard L. Turcotte, Malden, Mass., assignor to Radiation Monitoring Devices, Inc., Watertown, Mass.

Filed Feb. 3, 1981, Ser. No. 231,138
Int. Cl.³ B05D 1/02, 3/02; C03C 17/10, 17/22
U.S. Cl. 427—314 7 Claims



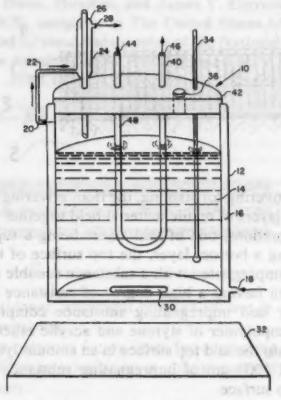
1. In the process of making a thin film comprising preparing a solution with solute elements including a salt of a first constituent element of said film and spraying said solution onto a heated substrate to form a film on said substrate, the solute and solvent elements not constituting said film forming volatile reaction products after contacting said heated substrate, said solution also including a reducing agent in sufficient amount to change the oxidation state of at least one said solute element after contacting said heated substrate, the improvement wherein the concentration of said reducing agent is greater than 1 M and greater than 10 times the stoichiometric amount necessary to react with said one solute element.

4,338,363

METHOD FOR INHIBITING THE FORMATION OF SCALE

Jasbir S. Gill, Coraopolis, Pa., and George H. Nancollas, Williamsville, N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,476
Int. Cl.³ B05D 3/02
U.S. Cl. 427—387 14 Claims



1. A method for inhibiting the formation of scale upon metallic heat exchanger surfaces exposed to water solution containing a supersaturated concentration of at least one alkaline earth metal salt at the surface temperature of the heat exchanger, said method comprising utilizing, as the exchanger surface, a corrosion resistant metal surface coated with a film of methylene siliconedichloride.

2. The method of claim 1 wherein the metal surface is coated with said film by covering the surface with methylene siliconedichloride or a solution of the methylene siliconedichloride followed by removing all excess non-adherent methylene siliconedichloride from said surface.

3. The method of claim 2 wherein after coating, the coated metal surface is heated to from about 50° C. to about 200° C. for from about 5 to about 180 minutes.

4,338,364

CONTINUOUS COATER

James L. Kennon, Avon; Lawrence J. Macartney, Lorain; Gerald W. Crum, Elyria; John C. Dunn, Amherst, and Donald R. Hastings, Elyria, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation of Ser. No. 111,666, Jan. 14, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 237,525
Int. Cl.³ B05D 1/02
U.S. Cl. 427—424 23 Claims

1. A coater comprising,

a coating chamber adapted to have an object conveyed through it, said coating chamber having side walls, end walls, a bottom and a ceiling,

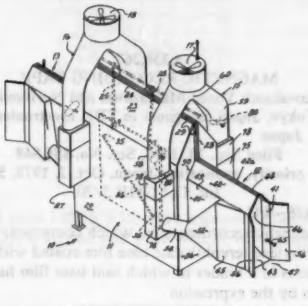
entrance and exit openings in said end walls through which objects may be introduced into and out of said chamber,

means for coating an object with a sprayed material in the course of passage through said chamber,

air flow control vestibules extending outwardly from each end of said chamber adjacent said entrance and exit openings, each of said vestibules having an outer opening longitudinally aligned with but remote from the associated entrance and exit openings of said chamber,

means for drawing air from outside said vestibules through said vestibules' outer openings without simultaneously drawing any substantial quantity of air from inside said chamber so as to create an air flow barrier to the escape from said chamber of airborne sprayed material, said last named means including

at least one air collector slot located on opposite sides of each of said vestibules, exhaust fan means and duct means



connected each of said air collector slots to said exhaust fan means whereby air is caused by said exhaust fan to flow into each of said vestibules through said outer openings and to be exhausted from said vestibules through said collector slots and said ducts.

4,338,365

BOILABLE POUCH FOR FOODS

Robert V. Russo, Brooklyn, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,757
Int. Cl.³ B65D 3/28
U.S. Cl. 428—35 2 Claims

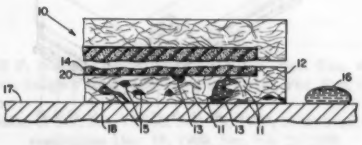
1. A boilable bag structure of a two-ply laminate comprising an inner film layer of polyester and an outer layer of biaxially oriented polyacrylonitrile homopolymer film adhered thereto.

4,338,366

SURFACE WIPING IMPLEMENT

Stephen F. Evans; Raymond J. Ludwa, both of Cincinnati, Ohio, and Orn Adalsteinsson, Wilmington, Del., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 129,957, Mar. 13, 1980, abandoned, which is a continuation of Ser. No. 927,309, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 846,248, Oct. 28, 1977, abandoned. This application Mar. 17, 1981, Ser. No. 244,567
Int. Cl.³ B32B 3/26, 33/00; A47L 13/16
U.S. Cl. 428—76 12 Claims



1. A semi-disposable flexible wiping implement for removing liquid from surfaces comprising an absorbent core (14) having at least one outer surface and an outer layer (12) on at least one of said outer surfaces, said implement being capable of repetitive use cycles comprising a wiping step to absorb liquid followed by a compressive wringing step to expel liquid, characterized in that the absorbent core (14) has a minimum wicking rate of at least 12.7 cms/min and said outer layer (12) is substantially non-collapsible and has a Liquid Removal Index of from 8 to 100 mm/g, said Liquid Removal Index being defined

by the term PT/39.37 R where P is the porosity index, T is the thickness of the outer layer in mm and R is the weight in grams of the liquid retained by the outer layer.

4,338,367

MAGNETIC RECORDING TAPE

Yoshio Kawakami; Yoneo Matsuzawa, and Norifumi Kajimoto, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 186,848
Claims priority, application Japan, Oct. 2, 1979, 54-126358
Int. Cl.[3] G11B *5/70*
U.S. Cl. 428—141 5 Claims

1. A magnetic recording tape, which comprises:

a polyethylene terephthalate base film coated with magnetic particles in a binder in which said base film has an index given by the expression

$$1.5 > 19.00 - 0.406 d_B - 0.016H - 0.553 d_T$$
$$d_T \leqq 18(\mu m)$$

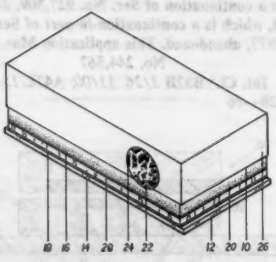
wherein $d_T(\mu m)$ designates the total thickness of the magnetic recording tape, $d_B(\mu m)$ designates the thickness of the base film and H designates the sum of numbers of interference rings (H_1, H_2, H_3 . . .) per 1 mm^2 on the surface of the base film.

4,338,368

ATTACHMENT SYSTEM FOR SILICA TILES

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Robert L. Dotts, Seabrook, Tex., and Jack W. Holt, Walnut, Calif.

Filed Dec. 17, 1980, Ser. No. 217,336
Int. Cl.[3] B32B *5/14, 5/26, 7/02;* B64C *1/38*
U.S. Cl. 428—212 20 Claims



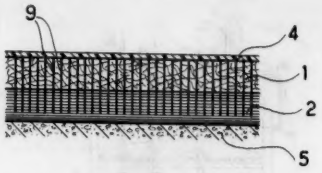
14. A lightweight insulating tile for attachment to a flexible nonuniform substrate by a thin layer of silicone adhesive, said tile comprising: a rigid porous block of refractory material, the refractory material being primarily a mixture of substantially chemically pure silica fibers rigidized by a high purity silica binder, the face portion of the attachment surface being densified by impregnation of a compatible refractory material having a particle size small enough to fill the intersticies of the porous refractory material to provide a dense pavement for engagement of the silicone adhesive.

4,338,369

FLOOR COVERING FOR STABLING

Pierre Foënard, Paris, France, assignor to Societe a Responsabilite Limitee: Societe de Developpement Pour l'Agriculture Sodelvage, Sainte Gauburge, France

Filed Jul. 7, 1980, Ser. No. 166,651
Claims priority, application France, May 30, 1980, 80 12061
Int. Cl.[3] B32B *5/06*
U.S. Cl. 428—235 7 Claims



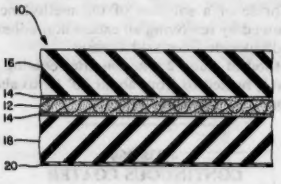
1. Floor covering for stabling, the floor covering comprising at least two layers of textile material held together by multiple needle perforations, one of said layers being a top layer and another being a bottom layer, the top surface of the said top layer being impregnated with a substance suitable for forming a porous skin having a high degree of resistance to abrasion wherein the said impregnating substance comprises a heat shrinkable copolymer of styrene and acrylic ether and is impregnated into the said top surface in an amount lying between 500 gm and 1000 gm of impregnating substance per square meter of top surface.

4,338,370

CHEMICALLY RESISTANT COATED FABRIC

Charles A. Suter, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 7, 1980, Ser. No. 137,946
Int. Cl.[3] B32B *7/00, 27/00, 25/04, 25/10*
U.S. Cl. 428—250 8 Claims



1. A chemically resistant fabric laminate, comprising:

a woven fabric layer, said fabric layer impregnated with a blend of a rubber and an adhesive system, said rubber made from compounds selected from the group consisting of natural cis-1,4-polyisoprene, a polymer made from a monomer of a conjugated diene having from 4 to 10 carbon atoms, nitrile rubber, and polychloroprene,

a rubber layer, said rubber layer directly attached to and adhered to one side of said impregnated fabric, said rubber layer made from a compound selected from the group consisting of natural cis-1,4-polyisoprene, a polymer made from a monomer of a conjugated diene having from 4 to 10 carbon atoms, nitrile rubber, and polychloroprene,

a substrate layer, said substrate layer comprising a blend of a rubber and a dry phenolic adhesive system, said substrate layer directly attached and adhered to the remaining side of said impregnated fabric layer, said rubber of said substrate layer made from a compound selected from the group consisting of natural cis-1,4-polyisoprene, a polymer made from a monomer of a conjugated diene having from 4 to 10 carbon atoms, nitrile rubber, and polychloroprene, and

a chemically resistant preformed film residing on said substrate layer, said substrate layer directly adhering said chemical resistant preformed film to said impregnated fabric layer.

4,338,371

ABSORBENT PRODUCT TO ABSORB FLUIDS

Frederic S. Dawn, Houston, and James V. Correale, Seabrook, both of N.Y., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 24, 1980, Ser. No. 219,681
Int. Cl.³ A61F *13/16*
U.S. Cl. 428—283 **12 Claims**

1. A multi-layer, absorbent product for use in contact with the skin comprising:

a. a water pervious facing layer for contacting the skin;

b. a first fibrous, wicking layer contiguous said water pervious layer;

c. a first container section having an inner layer and an outer layer forming a first absorbent container therebetween, said container section being comprised of a water pervious material, said inner layer being contiguous said first fibrous, wicking layer;

d. a first absorbent mass disposed in said first absorbent container, said first absorbent mass comprising a super absorbent high molecular weight acrylic polymer containing hydrophilic carboxylate groups said polymer forming a gel upon contact with an aqueous medium;

e. a second container section having an inner layer and said outer layer container therebetween, said second container section being comprised of a water pervious material, said inner layer of said second container being contiguous said outer layer of said first container section;

f. a second absorbent mass disposed in said second absorbent container, said second absorbent mass comprising a hydrolyzed starch-acrylonitrile graft copolymer, said copolymer forming a gel upon content with an aqueous medium; and

g. a liquid impermeable/gas permeable layer contiguous said outer layer of said second container section.

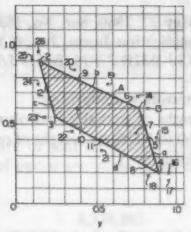
4,338,372

GARNET FILM FOR MAGNETIC BUBBLE DEVICE

Norio Ohta; Fumihiko Ishida, both of Hachioji; Tadashi Ikeda, Kodaira; Keikichi Ando, Musashino, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,136
Claims priority, application Japan, Sep. 17, 1979, 54-117986
Int. Cl.³ G11B *5/64*
U.S. Cl. 428—336 **7 Claims**

1. A garnet film for a magnetic bubble device, said garnet film being formed on a substrate of $Gd_3Ga_5O_{12}$ and having a composition represented by a general formula of $(YSmLuCa)_{3-x}Gd_x(Fe_{5-y}Ge_y)O_{12}$ where values of x and y are in a region enclosed by a segment a connecting a point 1 (0.78; 0.60) and a point 4 (0.90; 0.20) shown in the accompanying drawing, a segment b connecting said point 1 (0.78; 0.60) and a point 2 (0.15; 0.90), a segment c connecting said point 2 (0.15;



0.90) and a point 3 (0.25; 0.55) and a segment d connecting said point 3 (0.25; 0.55) and said point 4 (0.90; 0.20) inclusively.

4,338,373

COATING METHOD

Nobuyuki Ikeguchi, and Yasunori Osaki, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,919
Claims priority, application Japan, Dec. 21, 1979, 54-166697
Int. Cl.³ B05D *5/12*
U.S. Cl. 428—383 **6 Claims**

1. A method for coating an article which comprises coating the article first with (I) at least one imide resin selected from the group consisting of polyester imide resins, polyamideimide resins, polyhydantoin resins and mixtures thereof, and then with (II) cyanate ester resin which comprises as essential components (a) at least one cyanate compound selected from the group consisting of polyfunctional cyanate esters, prepolymer of said cyanate esters, coprepolymer of said cyanate esters and an amine and mixtures thereof and (b) at least one maleimide compound selected from the group consisting of polyfunctional maleimides, prepolymer of said maleimides, coprepolymer of said maleimides and an amine and mixtures thereof.

4,338,374

FIREPROOF MATERIAL

Rudolf P. Neser, Ludwigshafen am Rhein, Fed. Rep. of Germany, assignor to Woellner-Werke, Rhein, Fed. Rep. of Germany

Division of Ser. No. 77,768, Sep. 21, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,918
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841623
Int. Cl.³ B32B *9/04*; C09D *1/02, 5/18*; C09K *3/28*
U.S. Cl. 428—411 **25 Claims**

13. A substrate for architectural use rendered protected from fire damage comprising a flammable substrate having thereon a coating of a coating composition based on an alkali metal silicate binder, said binder comprising an alkali metal silicate solution containing a water glass-soluble, non-ionic surfactant in solution and further comprising an alkali metal trisilicate powder.

4,338,375

SURFACE COATING COMPOSITION

Kaname Hashimoto, Sakai, and Saizo Ikeda, Himeji, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed May 27, 1980, Ser. No. 153,242
Claims priority, application Japan, Jun. 6, 1979, 54-70740
Int. Cl.³ B32B *27/36;* B05D *3/02*
U.S. Cl. 428—412 11 Claims

1. A coating composition comprising:

A. 100 parts by weight of partially hydrolyzed condensation product of from 60 to 100% by weight of organotrialkoxysilane having the formula

$$R^1Si(OR^2)_3$$

in which R^1 is an aliphatic hydrocarbon containing from 1 to 4 carbon atoms or an aromatic hydrocarbon, and R^2 is an aliphatic hydrocarbon having 1 to 4 carbon atoms, and from 0 to 40% by weight of tetraalkoxysilane of the formula $Si(OR^3)_4$ wherein R^3 is an aliphatic hydrocarbon having 1 to 6 carbon atoms;

B. from 10 to 100 parts by weight of an organic carboxylic acid having 1 to 5 carbon atoms; and

C. from 0.01 to 1.0 parts by weight of a fluorocarbon anionic surface active agent.

6. A coating composition as claimed in claim 1 containing an effective amount of an inorganic or organic alkaline hardening catalyst for cross-linking said partially hydrolyzed condensation product to form a coating film.

7. A coating solution consisting essentially of a coating composition as claimed in claim 6 dissolved in an inert organic solvent.

8. A coating process which comprises applying to a substrate a thin coating film of a coating solution as claimed in claim 7 and then heating the coated substrate, at a temperature below the thermal deformation temperature of said substrate, to form a hardened dry coating film on said substrate.

9. A coated product prepared by the process of claim 8.

4,338,376

HIGH FLUOROCARBON CONTENT COATING COMPOSITION, METHOD OF APPLICATION, AND COATED ARTICLE

Steven Kritzler, Cronulla, Australia, assignor to Otis Elevator Company, Farmington, Conn.

Filed Oct. 20, 1980, Ser. No. 198,315
Claims priority, application Australia, Oct. 26, 1979, PE1089
Int. Cl.³ B32B *17/10;* B05D *3/02*
U.S. Cl. 428—417 15 Claims

12. A composite article comprising a substrate having a lubricious surface layer characterized by a polytetrafluoroethylene fluorocarbon polymer component, an epoxy thermosetting resin component, an amine cross-linking agent, and a silane wetting agent, based on weight percent, the fluorocarbon:epoxy resin ratio is up to about 2:1, and the silane wetting agent is present is an amount up to about 1.5% by weight based on total weight of solids in the composition, the composition having a low coefficient of friction with high abrasion resistance and adhesion when applied to the substrate.

15. The article of claim 12 wherein the substrate is metal or glass.

4,338,377

SULFONATO-ORGANOSILANOL COMPOUNDS AND AQUEOUS SOLUTIONS THEREOF

Boyd R. Beck, Spring City, Utah; Frank T. Sher, and George V. D. Tiers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 83,465, Oct. 10, 1979, Pat. No. 4,267,213, which is a division of Ser. No. 895,528, Apr. 11, 1978, Pat. No. 4,235,638. This application Aug. 18, 1980, Ser. No. 179,178
Int. Cl.³ B32B *9/00*
U.S. Cl. 428—428 7 Claims

1. An article having a durable hydrophilic surface thereon, said article comprising (a) a substrate having a siliceous surface and (b) a reversibly hydrophilic layer thereon, said layer comprising a sulfonato-organosilicon compound bound to said substrate, said compound having at least one sulfonato organic substituent therein wherein said sulfonato-organosilicon compound is a sulfonato-organosilanol compound having at least one sulfonato-organic substituent wherein the weight percentage of oxygen in said silanol compound is at least about 30%, and the weight percentage of silicon in said silanol compound is not greater than about 15%, said percentages being taken with reference to the water-free acid form of said silanol compound.

4,338,378

FILM FOR HEAT SEALING AND PROCESS OF HEAT SEALING

Takeshi Nabeta; Takeshi Masui, and Tsuguo Hasegawa, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 946,724, Sep. 28, 1978, Pat. No. 4,302,554. This application Jul. 31, 1981, Ser. No. 289,091
Claims priority, application Japan, Jun. 29, 1978, 53-78058
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—462 11 Claims

1. A laminate comprising:

(a) a first substrate comprising at least one member selected from the group consisting of plastic films, metallic foils and paper;

(b) a second substrate comprising a film for heat sealing which comprises a blend of:

(I) at least one member selected from the group consisting of (A) an elastomeric block copolymer containing 10 to 50% by weight of styrene and/or alpha-methyl styrene copolymerized with conjugated dienes, (B) a resinous block copolymer containing 50 to 95% by weight of styrene and/or alpha-methyl styrene copolymerized with conjugated dienes;

(II) a styrene-butadiene graft-copolymer, and

(III) at least one member selected from the group consisting of ethylene-alpha-olefin random copolymers, ethylene-vinyl acetate copolymers, ethylene-alkyl acrylate copolymers, polypropylene and ethylene-propylene elastomers; and

(c) an adhesive for bonding therebetween.

4,338,379

HIGH-SOLIDS THERMOSETTING ENAMEL COATING COMPOSITION

Clifford H. Strolle, Springfield, Pa., and Glenn D. Thornley, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1981, Ser. No. 234,583
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—520 12 Claims

1. A thermosetting enamel coating composition of a mixture of a polymer blend and a solvent for the polymer blend wherein the blend is 65–90% by weight of the mixture and consists essentially of

(a) 5–25% by weight, based on the weight of the blend, of a copolymer of

(1) a hydroxyalkyl ester of acrylic or methacrylic acid wherein the alkyl group has 2–10 carbon atoms and wherein the hydroxyalkyl ester is 25–35% by weight of the copolymer, and

(2) at least one other ethylenically unsaturated monomer selected from the group consisting of vinyl chloride, vinylidene chloride, ethylene, propylene, vinyl acetate, conjugated dienes, styrene, alkyl-substituted styrene, dibutyl maleate, C_1–C_{12} alkyl esters of acrylic acid, C_1–C_{12} alkyl esters of methacrylic acid, and mixtures of these

wherein the copolymer has a hydroxyl content of 2–6% by weight;

(b) 40–60% by weight, based on the weight of the blend, of a saturated polyester polyol that is the reaction product of

(1) pentaerythritol and at least one other branched-chain glycol wherein the molar ratio of glycol to pentaerythritol is from 2:1 to 6:1,

(2) and aromatic or saturated aliphatic monocarboxylic acid having no more than 18 carbon atoms, and

(3) a mixture of an aromatic and a saturated aliphatic acid wherein the molar ratio of aromatic acid to aliphatic acid is from 2:1 to 6:1

wherein the polyol has a hydroxyl content of 5–9% by weight; and

(c) 25–45% by weight, based on the weight of the blend, of an aminoplast resin.

4,338,380

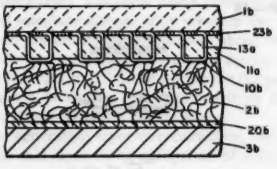
METHOD OF ATTACHING CERAMICS TO METALS FOR HIGH TEMPERATURE OPERATION AND LAMINATED COMPOSITE

Arnold R. Erickson, Orange; Carlino Panzera, Cromwell, and Robert P. Tolokan, Hamden, all of Conn., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 674,047, Apr. 5, 1976, Pat. No. 4,142,022. This application Sep. 5, 1978, Ser. No. 939,888

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—594 **25 Claims**



1. A method of making composite material comprising the steps of:

(1) providing a high temperature resistant metal alloy plate and a low modulus flexible low density metallic structural interface having first and second outer surfaces;

(2) bonding the alloy plate to the interface;

(3) providing a ceramic member; and,

(4) securing the second outer surface into the ceramic member so that thermal strains caused by temperature differentials between the ceramic member and the metallic plate are taken up without harmful effect by the interface.

4,338,381

STRUCTURAL MEMBER

Frank A. Rogers, 4 Orville Pl., Hamersley, Western Australia, Australia (6022)

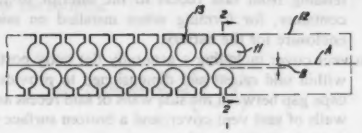
Filed Dec. 18, 1979, Ser. No. 104,840

Claims priority, application Australia, Dec. 22, 1978, PD7197

Int. Cl.³ E04B *1/08*

U.S. Cl. 428—575 **9 Claims**

1. A curved structural member formed from a flat strip of material having a plurality of slots formed at spaced intervals opening through opposite edges of said strip, the inner portion of each slot being the greater dimension than the outer portion



prior to curvature of said strip, said strip being bent to the desired degree of curvature in the plane of said strip.

4,338,382

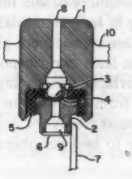
BATTERY SAFETY TERMINAL

David H. Fritts, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 11, 1981, Ser. No. 242,815

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—53 **9 Claims**



1. A safety terminal for a normally sealed electric device having a container subject to internal gas pressure, the terminal being incorporated in one outer wall of said container, wherein said terminal comprises:

an outer member separated by insulating means from an inner member which is electrically connected to current collector means within the device, the first and second members being electrically conductive, bridging means which is located to normally complete an electrical conducting circuit path between said outer member and said inner member, the bridging means being located in a chamber within said terminal, the chamber being normally sealed off from the interior of said container, pressure sensing means which is constructed to respond to excess gas pressure within the container to open said chamber to the interior of the container, and the resulting excess gas pressure entering said chamber being effective to force said bridging means to a position such that the electrical circuit path is broken between said outer member of the terminal and said inner member.

4,338,383

CONTAINER FOR A MAINTENANCE-FREE BATTERY

Gottfried W. Jutte, Indianapolis, and John V. McHugh, Greenfield, both of Ind., assignors to Richardson Chemical Company, Des Plaines, Ill.

Continuation of Ser. No. 935,250, Aug. 21, 1978, Pat. No. 4,214,045. This application Jul. 21, 1980, Ser. No. 170,799

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—88 **8 Claims**

1. A battery container for a battery comprising, in combination:

a container base including side walls forming a compartment for the battery;

means including a cover member having a top surface, a

bottom surface adapted for engaging the side walls of said container base, a recess on said top surface defining a first opposing surface, and at least one filler well portion extending from said recess to the interior of the battery container, for forming when installed on said base an enclosure for the battery;

a vent cover including a generally flat body portion seated within said recess and dimensioned to provide a gas escape gap between the side walls of said recess and the side walls of said vent cover, and a bottom surface defining a second opposing surface;

venting means including at least one vent plug portion pro-

jecting from said bottom surface of said body portion through said filler well into the interior of the battery container for establishing a first passageway for conveying gases egressing from said battery container, said vent plug portion being dimensioned for vapor-sealing engagement with the periphery of said filler well and said venting means including at least one axially-extending groove on the outside surface of said vent plug portion; and

means including at least one rib portion on at least one of said opposing surfaces for spacing said bottom surface of said vent cover from said bottom surface of said recess to form a second passageway for conveying gases from said first passageway to said peripheral gas escape gap.

4,338,384

BATTERY ACTIVATED BY SEA WATER

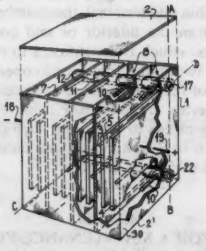
Jean Rouge, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 4, 1980, Ser. No. 204,053

Claims priority, application France, Nov. 5, 1979, 79 27221

Int. Cl.³ H01M 6/34

U.S. Cl. 429—119 **8 Claims**



1. A battery activated by immersion in sea water and constituted by a number of cells, each cell comprising two electrodes separated by tightly sealed partitions, comprising a first network of tubes for filling with sea water and a second network of tubes for discharging gases given off, wherein said first network and said second network each comprise a connecting tube which passes through said tightly sealed partition separating said cells, with one end of said connecting tubes communicating with the outside of the battery, said first and second networks each further comprising a series of tubes connected perpendicular to said connecting tube, one tube of each of said series ending in one of said cells.

4,338,385

DIVALENT SILVER OXIDE CELL CONTAINING CADMIUM AND TELLURIUM COMPONENTS

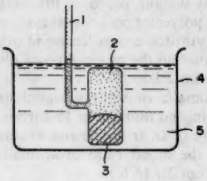
Yoichi Ohya, Funabashi, and Tadayoshi Shimizu, Tokyo, both of Japan, assignors to Sumitomo Metal Mining Company, Ltd., Tokyo, Japan

Filed Jun. 5, 1981, Ser. No. 271,088

Claims priority, application Japan, Jun. 23, 1980, 55-83974; Jul. 22, 1980, 55-99418; Oct. 9, 1980, 55-140400; Dec. 25, 1980, 55-182846; Feb. 6, 1981, 56-15665; Feb. 6, 1981, 56-15666

Int. Cl.³ H01M 6/04

U.S. Cl. 429—206 **39 Claims**



1. In a divalent silver oxide cell containing an alkaline electrolyte and having a positive electrode formed mainly of divalent silver oxide, the improvement wherein a cadmium component and a tellurium component are contained in at least one of the divalent silver oxide and the alkaline electrolyte.

4,338,386

MULTIPLE REPRODUCTION PROCESS AND APPARATUS INVOLVES TONED ELECTROPHOTOGRAPHIC IMAGE TRANSFER

Yutaka Koizumi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,350

Claims priority, application Japan, Sep. 18, 1979, 54-119767

Int. Cl.³ G03G 13/16

U.S. Cl. 430—49 **24 Claims**

1. A process for making multiple copies comprising the steps of:

forming a toner image on the surface of a photosensitive member through an electrophotographic process;

transferring said toner image onto an image retention medium to form a transferred toner image;

fixing said transferred toner image to said image retention medium to form a fixed toner image; and

applying ink to said fixed toner image to form an ink image while transferring said ink image to a copy paper.

10. Apparatus for making multiple copies comprising:

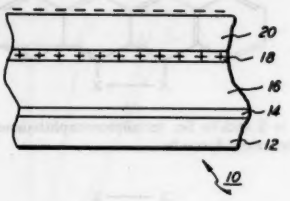
means for making a toner image;
an image retention medium for receiving said toner image on its surface;
means for temporarily fixing said toner image to said image retention medium;
means for applying ink to said toner image thus fixed to said image retention medium; and
means for transporting a copy paper to bring said copy paper in contact with said image retention medium.

4,338,387

OVERCOATED PHOTORECEPTOR CONTAINING INORGANIC ELECTRON TRAPPING AND HOLE TRAPPING LAYERS

Harvey J. Hewitt, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1981, Ser. No. 239,240
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 **9 Claims**



1. A layered inorganic photoresponsive device which comprises
(a) a substrate;
(b) a layer of electron trapping material, this layer being comprised of halogen doped selenium, halogen doped arsenic selenium alloys, and mixtures thereof;
(c) a hole transport layer in operative contact with the electron trapping layer, this layer being comprised of a halogen doped selenium arsenic alloy wherein the percentage of selenium present by weight is from about 99.5 percent to about 99.9 percent, the percentage of arsenic present by weight is from about 0.5 percent to about 0.1 percent, and the halogen is present in an amount of from 10 parts per million to about 200 parts per million;
(d) a charge generating layer overcoated on the hole transport layer; said layer being comprised of alloys of selenium-tellurium, or alloys of selenium, tellurium, and arsenic,
(e) a hole trapping layer overcoated on the generating layer, said layer being comprised of a halogen doped selenium arsenic alloy wherein the amount of selenium present by weight ranges from about 95 percent to about 99.9 percent, the amount of arsenic present ranges from about 0.1 percent to about 5 percent, and the amount of halogen present ranges from about 10 parts per million to about 200 parts per million; and
(f) a layer of insulating organic resin overlaying the hole trapping layer.

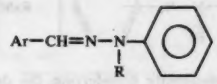
4,338,388

ELECTROPHOTOGRAPHIC ELEMENT WITH A PHENYHYDRAZONE CHARGE TRANSPORT LAYER

Kiyoshi Sakai; Mitsuru Hashimoto, both of Numazu, and Tomiko Kawakami, Tokyo, all of Japan, assignors to Ricoh Company, Limited, Tokyo, Japan

Filed Oct. 10, 1979, Ser. No. 83,482
Claims priority, application Japan, Oct. 13, 1978, 53/125145
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—59 **23 Claims**

1. An electrophotographic element comprising:
an electroconductive support member,
a charge carrier producing layer,
a charge transport layer adjacent the charge carrier producing layer, the charge transport layer comprising a hydrazone of the formula;



wherein Ar represents a substituted or unsubstituted fused polycyclic hydrocarbon ring system, and R represents a methyl group, an ethyl group, a benzyl group or a phenyl group; and
a binder agent.

4,338,389

CDS-BINDER MEMBER FOR ELECTROPHOTOGRAPHY WITH FE, CO, NI ADDITIVES

Kiyoshi Suzuki, Yokohama, and Kazumi Okano, Fuchu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,411
Claims priority, application Japan, Oct. 4, 1979, 54/128326
Int. Cl.³ G03G 5/087, 5/09
U.S. Cl. 430—94 **3 Claims**

1. A photosensitive member for electrophotography having a photoconductive layer formed by dispersing photoconductive cadmium sulfide particles in a binder, wherein said photoconductive layer further contains an additive selected from the group consisting of iron, nickel, cobalt and compounds thereof dispersed in said binder separately from said photoconductive cadmium sulfide particles in an amount of 1×10^{-5} to 6×10^{-4} parts by weight of said additive to 1 part by weight of the binder.

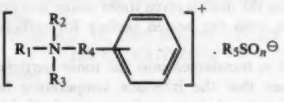
4,338,390

QUARTERNARY AMMONIUM SULFATE OR SULFONATE CHARGE CONTROL AGENTS FOR ELECTROPHOTOGRAPHIC DEVELOPERS COMPATIBLE WITH VITON FUSER

Chin H. Lu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1980, Ser. No. 212,969
Int. Cl.³ G03G 9/08
U.S. Cl. 430—106 **32 Claims**

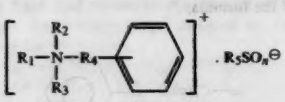
1. A dry electrostatic toner composition comprised of toner particles containing resin particles and pigment particles, and from about 0.1 to about 10 percent based on the weight of the toner particles of an organic sulfate or sulfonate composition of the following formula:



wherein R_1 is an alkyl radical containing from about 12 carbon atoms to about 22 carbon atoms, R_2 and R_3 are independently selected from alkyl groups containing from about 1 carbon atom to about 5 carbon atoms, R_4 is an alkylene group containing from about 1 carbon atom to about 5 carbon atoms, R_5 is a tolyl group or an alkyl group containing from about 1 carbon atom to about 3 carbon atoms and n is the number 3 or 4.

9. A method of imaging comprising forming a negative electrostatic latent image on a photoreceptor surface, contacting the resulting image with a developer composition comprised of positively charged toner particles and carrier particles, the toner particles being comprised of resin particles, pigment particles, and from about 0.1 to about 10 weight per-

cent based on the weight of the toner particles of an organic sulfate or sulfonate composition of the following formula:



followed by subsequently transferring the developed latent image to a substrate, and permanently affixing the image thereto, wherein R_1 is analkyl radical containing from about 12 carbon atoms to about 22 carbon atoms, R_2 and R_3 are independently selected from alkyl groups containing from about 1 carbon atom to about 5 carbon atoms, R_4 is an alkylene group containing from about 1 carbon atom to about 5 carbon atoms, R_5 is a tolyl group or an alkyl group containing from about 1 carbon atom to about 3 carbon atoms and n is the number 3 or 4.

4,338,391

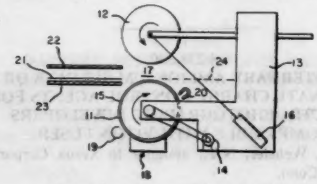
MAGNETIC RESIST PRINTING PROCESS, COMPOSITION AND APPARATUS

George R. Nacci, Wilmington, Del., and Donald G. Pye, deceased, late of Wilmington, Del. (by Sarah W. Pye, executrix), assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 15,799, Mar. 2, 1979, which is a continuation-in-part of Ser. No. 890,973, Mar. 25, 1978, abandoned. This application Jul. 30, 1980, Ser. No. 173,871

Int. Cl.³ G03G *19/00*

U.S. Cl. 430—122 **21 Claims**



1. A process for forming a resist on an interstices-free substrate surface comprising the sequential steps of:

(a) developing a latent magnetic image in a magnetic member with at least two layers of normally nontacky heat-coalescible magnetic toner particles to form a toner image;

(b) heating the surface on which the resist is to be formed to a temperature of 40°–150° C.;

(c) bringing the multilayered toner image into contact under pressure with the heated surface for sufficient time by which

(1) heat is transferred into the toner particles in such a manner that the interface temperature between the toner and substrate surface exceeds the tackification temperature of the toner and the interface between the toner and the magnetic member is below both the adhesion temperature of the toner to the magnetic member and the Curie temperature of the magnetic member; and

(2) the toner particles under contact pressure are transferred and adhered imagewise to the interstices-free surface;

(d) separating the magnetic member from the transferred image; and

(e) modifying the untoned areas of the substrate surface.

2. The resist process of claim 1 and stripping said resist image after the modifying step.

4,338,392

CLASS OF E-BEAM RESISTS BASED ON CONDUCTING ORGANIC CHARGE TRANSFER SALTS

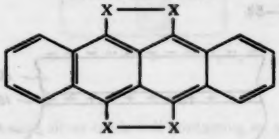
Edward M. Engler, San Jose, Calif.; John D. Kuptsis; Robert G. Schad, both of Yorktown Heights, N.Y., and Yaffa Tomkiewicz, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 65,291, Aug. 9, 1979, abandoned. This application Jul. 28, 1981, Ser. No. 287,662

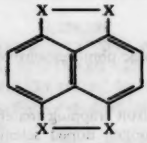
Int. Cl.³ G03C *1/72*

U.S. Cl. 430—270 **27 Claims**

1. An electron sensitive resist comprising a uniform sublimed solid film of a conducting organic charge transfer material selected from the group consisting of neutral halogen salts of each of the following donors; tetrathiafulvalene and its alkyl derivatives, tetraselenafulvalene and its alkyl derivatives, tetraheterotetracenes having the general structural formula:



where X is S and/or Se; tetraheteronaphthalenes having the general structural formula:



where X is S and/or Se; perylene, tetramethylphenylenediamines, phthalocyanines and porphyrins and wherein said halogen is selected from chlorine, bromine and iodine.

4,338,393

HETEROCYCLIC MAGENTA DYE-FORMING COUPLERS

Joseph Bailey, Bushey Heath, and John Cook, Leighton Buzzard, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

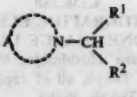
Filed Feb. 4, 1981, Ser. No. 231,202

Claims priority, application United Kingdom, Feb. 26, 1980, 8006476

Int. Cl.³ G03C *7/00, 1/40*

U.S. Cl. 430—386 **8 Claims**

6. A process of forming a magenta dye image in a photographic element comprising a support and an imagewise exposed silver halide emulsion, comprising the step of developing the element with a developer composition containing a color developing agent in the presence of a magenta dye-forming coupler having the structure:



wherein:

A represents the atoms necessary to complete, with the nitrogen atom to which it is attached, a pyrazolotriazole, pyrazolobenzimidazole or indazolin-3-one magenta dye-forming coupler moiety whose coupling position is inactivated by the —CHR^1R^2 group;

CHR^1R^2 is a blocking group which, upon reaction with oxidized color developing agent, is detached from the magenta dye-forming coupler moiety to yield a mobile reaction product;

R^1 is alkyl—O—CO—, alkyl—CO—, aryl—O—CO—, aryl—CO—, —COOH, $—NO_2$ or —CN; and

R^2 is a group specified for R^1 or aryl—NHCO—.

4,338,394

PROCESS FOR HARDENING PHOTOGRAPHIC GELATIN

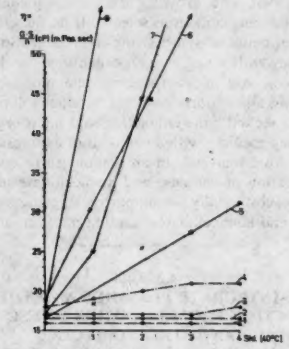
Wolfgang Himmelmann, Leverkusen; Peter Bergthaller, Cologne, and Johannes Sobel, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,756

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1980, 3000407

Int. Cl.³ G03C *1/30*

U.S. Cl. 430—621 **5 Claims**



1. A process for hardening a photographic silver halide material comprising of a support layer and at least one gelatin-containing layer applied thereto with a compound reacting with the amino groups of the gelatin as crosslinking agent, characterised in that a compound containing from 2 to 6 sulfonyl ethyl sulfate groups in the form of its salts is incorporated as crosslinking agent in the coating composition of the gelatin-containing layer(s) or the gelatin-containing layer(s) applied to the support layer, and in that the activity of the compound as a crosslinking agent is initiated by adjusting a pH-value in the range from 6.5 to 9 in the coating composition or in the range from 6.5 to 11 during the production process in the gelatin-containing layer.

4,338,395

METHOD FOR THE ANALYSIS OF TRIGLYCERIDES

Luis P. Leon, Fairfield, Conn.; Chien-Kuo Yeh, Pleasantville, and Syed I. Ahmad, Orangeburg, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 21, 1980, Ser. No. 171,112

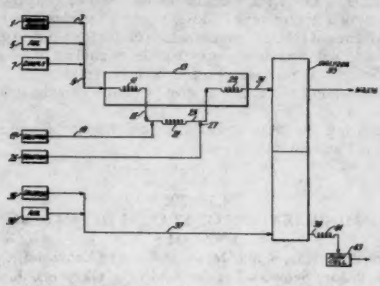
Int. Cl.³ C12Q *1/50, 1/48*

U.S. Cl. 435—17 **28 Claims**

1. A method for the analysis of triglycerides in a biological fluid which comprises:

(a) treating said biological fluid to remove endogenous glycerol and pyruvate by combining with said fluid, as a first component, adenosine triphosphate (ATP), enzyme glycerol kinase (GK) and a metal cation activator for said GK, as a second component, enzyme pyruvate kinase (PK) in the presence of substrate phosphoenol pyruvate (PEP) and an enzyme PK activator, and as a third component, glutamate and enzyme alanine aminotransferase (GPT);

(b) enzymatically hydrolyzing the triglycerides in the resulting fluid free of glycerol and pyruvate by combining said fluid with a mixture comprised of a microbial lipase, a surfactant selected from polyoxyethylene (POE) alkylamides, POE esters of fatty acids, POE mercaptans, POE



alkylamines, POE polyol esters, POE acetylenic glycols and POE phosphate esters, and an alkaline earth metal cation, in the form of a salt; and

(c) determining the amount of glycerol produced from said enzymatic hydrolysis.

4,338,396

HEART ATTACK SCREENING METHOD AND PROCESS

John Y. Kiyasu, 94 Meadow St., Garden City, N.Y. 11530

Continuation-in-part of Ser. No. 922,885, Jul. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 730,102, Oct. 6, 1976, Pat. No. 4,105,499. This application Aug. 13, 1980, Ser. No. 177,662

Int. Cl.³ C12Q *1/50*; B01D *15/08*

U.S. Cl. 435—17 **5 Claims**

1. A process for identification and collection of the creatine phosphokinase-MB fraction from human blood serum, which comprises the steps of priming a chromatographic column having a packing consisting essentially of DEAE-dextran with a strongly anionic polymer as conditioner, introducing a green food marker dye, introducing a sample of human blood serum from a human patient into the primed column, permitting the absorbed fraction from said serum to move from the top of the column matrices through the column to the bottom of the column matrices, introducing about 1 ml. of a solution of 0.3 M NaCl and 0.05 M "Tris" at a pH of 6.9 and identifying by visual observation of the marker dye and collecting from the bottom of said column about 70% of the creatine phosphokinase-MB fraction present in said sample at 100% predictability and in concentrated form.

4,338,397

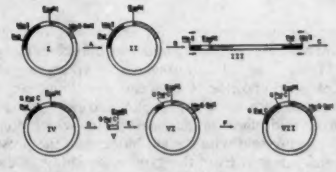
MATURE PROTEIN SYNTHESIS

Walter Gilbert, and Karen Talmadge, both of Cambridge, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Apr. 11, 1980, Ser. No. 139,225

Int. Cl.³ C12P *21/00*

U.S. Cl. 435—68 **19 Claims**



1. A method of synthesizing within a bacterial host, and secreting through the membrane of the bacterial host, a selected mature protein or polypeptide, which comprises:

(a) cleaving a cloning vehicle, comprising a plasmid, phage DNA or other DNA sequence which is able to replicate in the bacterial host, to form a cleavage site after a promoter of either (1) a bacterial or phage gene within the cloning vehicle or (2) a DNA fragment of the bacterial or phage gene;
(b) forming a hybrid gene by inserting into the cleavage site a non-bacterial DNA fragment which codes for a precursor of the selected protein or polypeptide, including the signal sequence of the selected protein or polypeptide;
(c) transforming the bacterial host with the cloning vehicle; and then
(d) culturing the transformed bacterial host to secrete the selected protein or polypeptide.

4,338,398

IMMOBILIZATION OF STARCH DEGRADING ENZYMES

Masaru Yoneyama, Souja, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Mar. 13, 1980, Ser. No. 130,182

Claims priority, application Japan, Mar. 20, 1979, 54-32874; Jan. 12, 1980, 55-2316

Int. Cl.³ C12P *19/22*; C12N *11/00*

U.S. Cl. 435—95 **10 Claims**

1. In a process for preparing immobilized starch-degrading enzyme consisting essentially of immobilizing by physical adsorption a starch-degrading enzyme onto a water-insoluble carrier, thereby insolubilizing said enzyme, the improvement whereby the activity of the enzyme after physical adsorption is enhanced, comprising, prior to the physical adsorption step, modifying or cross-linking, in solution, the starch-degrading enzyme with a mono- or poly-functional reagent at a pH in the range of 3 to 10 and temperatures in the range of 0° to 80° C., in a manner that said enzyme is not substantially insolubilized.

4,338,399

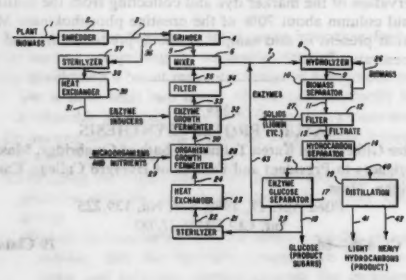
PROCESS FOR RECOVERING HYDROCARBONS FROM HYDROCARBON-CONTAINING BIOMASS

Thomas A. Weil, Naperville; Peter M. Dzadzic, Lisle, both of Ill.; Chien-Cheng J. Shih, Irvine, Calif., and Michael C. Price, West Chicago, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,492

Int. Cl.³ C12P *19/14, 19/02, 5/00, 5/02*

U.S. Cl. 435—99 **5 Claims**



1. A process using enzymes for enzymatically converting whole plant biomass containing hydrocarbon-containing plants selected from the Euphorbiaceae, Apocynaceae, Asclepiadaceae, Compositae, Cactaceae and Pinaceae families and mixtures thereof to soluble sugars and recovering hydrocarbons from said plants in increased yields which comprises:
(a) hydrolyzing said whole plant biomass in the presence of enzymes selected from the group consisting of cellulase, hemicellulase and mixtures thereof under conditions which promote conversion of cellulose and hemicellulose to soluble sugars;
(b) removing a stream of hydrolysis products comprising a liquid sugar-containing phase, a liquid hydrocarbon-containing phase and a solid phase containing unhydrolyzed spent solids, all phases containing enzymes selected from the group consisting of cellulase and hemicellulase enzymes and mixtures thereof from the hydrolysis stage;
(c) separating liquid phases and solid phases of step (b);
(d) continuously adding a stream to step (a) of fresh said whole plant biomass to replenish said whole plant biomass converted to hydrolysis products;
(e) separating said liquid phases from step (c) thereby recovering said enzymes present and said hydrocarbons present;
(f) recovering a stream of product sugar solution and enzyme solution from step (e);
(g) sterilizing a sugar product stream from step (f) to serve as sterile growth medium for microorganisms;
(h) adding the recovered solids from step (c) to the hydrolysis stage;
(i) providing a stream of makeup enzymes selected from the group consisting of cellulase, hemicellulase and mixtures thereof for the hydrolysis steps by the steps including:
(1) in a first zone, growing in a suitable medium enzyme-synthesizing organisms selected from the group consisting of cellulase-synthesizing microorganisms, hemicellulase-synthesizing microorganisms and mixtures thereof, said microorganism-containing medium comprising minor portions of the product solutions;
(2) in a second zone contacting said microorganism-containing medium with an amount of cellulosic and hemicellulosic materials in an amount sufficient to induce formation of cellulase and hemicellulase under conditions substantially nonsupportive of growth of the cellulase and hemicellulase-secreting microorganisms.

4,338,400

CO-INTEGRATE PLASMIDS AND THEIR CONSTRUCTION FROM PLASMIDS OF ESCHERICHIA AND STREPTOMYCES

Jack J. Manis, and Sarah K. Highlander, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 26, 1982, Ser. No. 228,240

Int. Cl.³ C12N *15/00*; C12P *21/00*; C12N *1/20, 1/00*

U.S. Cl. 435—172 **10 Claims**

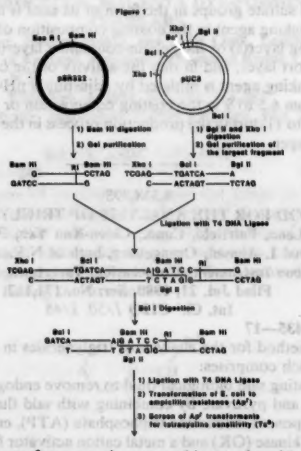


Figure 1
pBR322
pUC8
1) Bam HI digestion
2) Gel purification
1) Bgl II and Xho I digestion
2) Gel purification of the largest fragment
Ligation with T4 DNA Ligase
Bgl II
Gel I Digestion
1) Ligation with T4 DNA Ligase
2) Transformation of E. coli to ampicillin resistance (Ap^R)
3) Screen of Ap^R transformants for tetracycline sensitivity (Tc^S)

5. A process for preparing recombinant plasmid pUC1026 which comprises:
(a) digesting plasmid pBR322 with BamHI to obtain linear plasmid DNA;
(b) purifying said linear plasmid DNA;

(c) digesting plasmid pUC6 with BglII and XhoI and purifying the resulting largest DNA fragment;
(d) precipitating said purified DNA's from steps (b) and (c) and ligating to obtain ligated DNA;
(e) deproteinizing said ligated sample and then digesting with BclI to obtain linear DNA; and,
(f) deproteinizing said linear DNA and ligating to obtain recombinant plasmid pUC1026.

4,338,401

IMMOBILIZATION OF ENZYMES

Pietro Cremonesi, Milan, Italy, assignor to Italfarmaco S.p.A., Milan, Italy

Filed Aug. 4, 1980, Ser. No. 175,349
Claims priority, application Italy, Feb. 28, 1980, 20213 A/80
Int. Cl.³ C12N *11/10, 11/04, 11/08*
U.S. Cl. 435—178 **14 Claims**

1. A process for the preparation of a copolymer of a polysaccharide having enzymatic activity, which comprises adding to a suspension of a polysaccharide in an aqueous medium, a vinyl monomer and an enzyme, wherein the vinyl monomer is an N-acrloyl derivative of a nitrogenous heterocyclic compound or a monomer of the formula

$$H_2C{=}C(R)-R' \qquad (I)$$

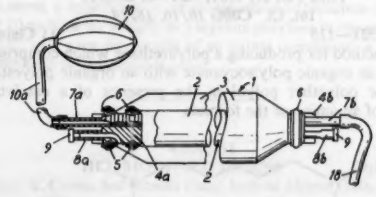
in which R is hydrogen or methyl, R′ is CN or COOR″, and R″ is lower alkyl, epoxy substituted lower alkyl or hydroxy substituted lower alkyl, then adding a catalyst which comprises a ferric salt and irradiating the resulting mixture with ultraviolet light to cause polymerization and form said copolymer.

4,338,402

ARTIFICIAL INSEMINATION INSTRUMENT FOR LIVESTOCK

Teruaki Suzuki, Hamamatsu, Japan, assignor to Kabushikikaisha Seisan Nipponsha Hamamatsu-Ko, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,031
Int. Cl.³ C12M *1/00*
U.S. Cl. 435—287 **4 Claims**



1. A storage device for semen, for use in artificial insemination of livestock, comprising a body including an internal space, a dialysis film sealed to the body within said space and dividing said space into a first chamber and a second chamber, two first conduits in said body communicating with said first chamber, at least one second conduit in said body communicating with said second chamber, and means for stoppering said at least one second chamber.

4,338,403

DIELECTRIC CERAMICS

Syunichiro Kawashima, Nishinomiya; Masamitsu Nishida; Ichiro Ueda, both of Osaka, and Hiromu Ouchi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 21, 1981, Ser. No. 265,708
Claims priority, application Japan, May 23, 1980, 55-69403; Jul. 17, 1980, 55-98375
Int. Cl.³ C04B *35/46, 35/50*; H01B *3/12*
U.S. Cl. 501—136 **2 Claims**

1. A dielectric ceramic consisting essentially of 34.5 to 82 weight % of titanium oxide (TiO_2), 9 to 63 weight % of praseodymium oxide (Pr_6O_{11}) and 2.5 to 23.5 weight % of barium oxide (BaO), at most 96 weight % of said praseodymium oxide being replaceable by neodymium oxide (Nd_2O_3).

4,338,404

GEL PERMEATION CHROMATOGRAPHIC PACKING AND PROCESS FOR PRODUCING SAME UTILIZING SUSPENSION POLYMERIZATION

Yasuyuki Tanaka, Hachioji; Junichi Takeda, Tokyo, and Kohji Noguchi, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaki, Japan

Continuation of Ser. No. 74,028, Sep. 10, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,505
Claims priority, application Japan, Sep. 9, 1978, 53-110211; Dec. 20, 1978, 53-156292
Int. Cl.³ C08J *9/16*
U.S. Cl. 521—52 **15 Claims**

1. A packing for high speed liquid chromatography prepared by the process which comprises suspending in water a mixture consisting of 65 to 90 parts by weight of at least one monovinylbenzene, 35 to 10 parts by weight of at least one polyvinylbenzene, the total amount of the monovinylbenzene and polyvinylbenzene being 100 parts by weight, and 30 to 200 parts by weight of a solvent capable of dissolving polystyrene, and free radical-polymerizing the monovinylbenzene and the polyvinylbenzene in suspension, said polymerizaton being carried out in the presence of 0.1 to 5.0 parts by weight of at least one free radical polymerization initiator having a half-life period of about 2 to 60 minutes at 70° C., and in such a manner that at least until the polymerization conversion reaches 50%, the polymerization is effected at a temperature at which the half-life period of the polymerization initiator is in the range of about 5 to 120 minutes to thereby provide a microporous, granular cross-linked monovinylbenzene-polyvinylbenzene copolymer having a volume average particle diameter of about 2 to 50 micrometers, an exclusive molecular weight for polystyrene of about 500 to 20,000, and the weight percent (X) of polyvinylbenzene units based on the total monomeric units in the copolymer and the gradient (α) of the calibration curve of the polystyrene are defined by the region bounded by and including the following three lines in rectangular coordinates (α, X):

$$\alpha = \frac{2}{15}X + \frac{4}{3}$$

$\alpha = 2.5$

$X = 35.$

4,338,405
PROCESS FOR CONTINUOUS CONTROLLED ALCOHOLYSIS OF POLYVINYL ACETATE

Ronald L. Saxton, West Grove, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1980, Ser. No. 215,814
Int. Cl.³ C08F 8/12
U.S. Cl. 525—62 **13 Claims**

1. In a continuous process for the partial alcoholysis of polyvinyl acetate homopolymer or copolymer which process comprises (1) rapidly premixing a methanol solution of polyvinyl acetate homopolymer or copolymer with a methanol solution of a basic catalyst in a mixing zone to form a uniform mixture of said solutions, (2) passing said mixture from the mixing zone into a reaction zone, (3) passing said mixture through said reaction zone while maintaining the temperature and residence time in said reaction zone such that the desired degree of alcoholysis is obtained, (4) continuously removing the resultant products of reaction from the reaction zone and (5) rapidly and uniformly neutralizing the basic catalyst in the resultant solid product by treating said product with an acidified liquid which is an inert non-solvent for the solid product, the improvement which comprises producing a partially alcoholyzed polyvinyl alcohol having a saponification number of up to about 145 and a maximum hot water insoluble fraction of about 1.1% by premixing catalyst and polymer solutions in a static mixer combined with using an intermeshing, self wiping, twin-rotor mixer, or mixing extruder to provide the reaction zone, and by adjusting the feed temperature, the shear rate in the premixer, and the catalyst concentration in the catalyst feed solution such that the ratio

$$\frac{kC_i(10^2)}{\dot{\gamma}_p}$$

is from about 0.5 to about 1.4

where k is the alcoholysis reaction rate constant in sec^{-1}

C_i is the catalyst feed solution concentration in weight %

γ_p is the shear rate in the premixer in sec^{-1}

provided, that when the saponification number of the partially alcoholyzed polyvinyl alcohol approaches the maximum value of about 145 the ratio

$$\frac{kC_i(10^2)}{\dot{\gamma}_p}$$

does not exceed about 1.1.

4,338,406
HIGH-IMPACT POLYAMIDE MOULDING COMPOSITIONS

John R. Sanderson, Austin, Tex.; Rudolf Binsack; Friedrich Fahnler, both of Krefeld, Fed. Rep. of Germany, and Christian Lindner, Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 194,772, Oct. 7, 1980, abandoned. This application Jul. 16, 1981, Ser. No. 283,824
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941025
Int. Cl.³ C08L 77/00
U.S. Cl. 525—66 **5 Claims**

1. A moulding composition comprising

I. from 50 to 99% by weight of polyamides having a relative viscosity (as measured on a 1% by weight solution in m-cresol at 25° C.) of from 2.5 to 5.0 and

II. from 1 to 50% by weight of graft product produced from

(a) 70 to 95% by weight of a crosslinked polymer of butadiene and/or substituted butadiene, of which up to 5% by weight may optionally consist of styrene and/or an ester of (meth)acrylic acid, as the graft substrate and

(b) 5 to 30% by weight of (meth)acrylates as graft monomer, characterised in that the graft monomers are a mixture of

(1) from 70 to 95% by weight of an ester of acrylic acid with a primary or secondary alcohol containing from 1 to 4 carbon atoms and

(2) from 5 to 30% by weight of the t-butyl ester of acrylic acid and/or methacrylic acid

the sum of I and II, the sum of (a) and (b) and the sum of (1) and (2) are to amount to 100% by weight.

4,338,407
STABILIZATION OF HIGH RESILIENCE POLYURETHANE FOAM

Kiran B. Chandalia, Cheshire, and Henry G. Barnowski, Durham, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 6,951, Jan. 25, 1979, Pat. No. 4,278,770, which is a continuation-in-part of Ser. No. 898,274, Apr. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 881,297, Feb. 27, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,846
Int. Cl.³ C08G 18/14
U.S. Cl. 521—99 **29 Claims**

1. In a process for preparing a high resilience polyurethane foam from a reaction mixture comprising:

(a) a polyether polyol having a molecular weight of at least about 1,500, a polyhydroxy alcohol nucleus having a functionality from about 2 to about 8, polyoxyalkylene chain segments attached to said nucleus, and a ratio of primary to secondary hydroxyl end groups ranging from about 1.5:1 to about 5.5:1;

(b) an organic polyisocyanate;

(c) a foaming agent; and

(d) a reaction catalyst;

said process including the steps of:

including in said reaction mixture a polyol containing a proportion of an effectively dispersed finely divided solid particulate material, said particulate material having, prior to dispersion in said polyol, an average primary particle size of about 0.007 to about 10 microns and a pH ranging from about 3 to about 5, and further having, in dispersion in said polyol, an effective maximum particle size of less than about 75 microns; and

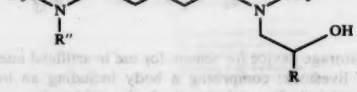
adding to said reaction mixture an effective proportion of 1,4-cyclohexanedimethanol to stabilize said reaction mixture.

4,338,408
POLYURETHANES USING BIS(AMINOETHYL)ETHER DERIVATIVES AS CATALYSTS

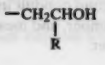
Robert L. Zimmerman, Austin, and Ernest L. Yeakey, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,900
Int. Cl.³ C08G 18/18, 18/14
U.S. Cl. 521—115 **11 Claims**

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of an amine of the formula



where R is hydrogen or lower alkyl and R'' is methyl or



4,338,409

ELASTOMERIC THERMOPLASTIC MOULDING COMPOSITIONS

Ulrich Grigo; Friedrich Fahnler, both of Krefeld; Christian Lindner, Cologne, and Rudolf Binsack, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,287

Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019233

Int. Cl.³ C08L 77/00

U.S. Cl. 525—66 5 Claims

1. Elastomeric thermoplastic moulding compositions composed of:

(A) from 5 to 35%, by weight, of a polyamide; and

(B) from 95 to 65%, by weight, of a graft product produced from:

(1) from 70 to 95% by weight of a crosslinked polymer consisting of at least 95%, by weight, of optionally substituted butadiene as graft substrate; and

(2) from 5 to 30%, by weight of an ester of methacrylic acid and/or acrylic acid and an alcohol containing from 1 to 8 carbon atoms as graft monomer, the gel content of the graft base being >70%, as measured in toluene, the degree of grafting G being ≧0.15 and the average particle diameter of the graft base being from 0.2 to 0.6 μm and the sum of (A) and (B), and (1) and (2) always being 100% by weight.

4,338,410

PROCESS FOR PRODUCING GRAFT COPOLYMERS

Katsuji Ueno, Hirakata, and Takashi Maruyama, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

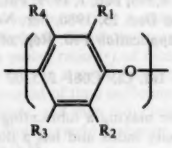
Filed Feb. 11, 1980, Ser. No. 120,398

Claims priority, application Japan, Feb. 23, 1979, 54/20954

Int. Cl.³ C08F 8/00

U.S. Cl. 525—132 10 Claims

1. A process for producing a graft copolymer, which comprises melt-blending 100 parts by weight of a resin mixture comprising 90 to 10% by weight of a polyphenylen oxide having a unit structure of



(wherein R_1, R_2, R_3 and R_4 each represents hydrogen, a halogen atom, a hydrocarbon or substituted hydrocarbon radical) and 10 to 90% by weight of a styrene polymer in the presence of 0.01 to 5 parts by weight of an oxime compound, a nitroso compound or mixtures thereof.

4,338,411

MODIFIED RESINS

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 26, 1981, Ser. No. 238,339

Int. Cl.³ C08L 23/26

U.S. Cl. 525—145 8 Claims

1. A thermoplastic modified ionomer resin prepared by reaction of an ionic copolymer of ethylene and ethenically unsaturated mono- or dicarboxylic acid of 3–8 carbon atoms in which the acid groups of copolymer are neutralized with metal ions with 0.2–20 parts by weight of dimethylol phenolic compound per 100 parts by weight of said resin.

4,338,412

INTUMESCENT COMPOSITIONS OBTAINED BY REACTING POLYISOCYANATES, PHOSPHORUS-CONTAINING SUBSTANCES AND AROMATIC HYDROXY CARBOXYLIC ACIDS ON SALTS

Wulf von Bonin, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,559

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 3025309

Int. Cl.³ C08G 18/14

U.S. Cl. 521—157 6 Claims

1. Intumescent compositions, which may be foamed, obtained by reacting:

(1) polyisocyanates,

(2) phosphorus-containing condensation products having at least one hydroxyl group and obtained by condensing (i) primary or secondary aliphatic, cycloaliphatic, aromatic, araliphatic or heterocyclic monoamines and/or polyamines, which mono- and polyamines may contain OH groups, (ii) carbonyl compounds, and (iii) dialkyl phosphites,

(3) aromatic hydroxy carboxylic acids or salts thereof, and

(4) optionally, water and/or additional organic compounds containing isocyanate-reactive hydrogen atoms.

4,338,413

POLYMER BLENDS

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 16, 1980, Ser. No. 197,387

Int. Cl.³ C08L 77/00

U.S. Cl. 525—179 15 Claims

1. A thermoplastic composition comprising a blend of about 20 to 98 parts by weight of plastic, and, correspondingly, about 80 to 2 parts by weight of cured particulate rubber wherein the plastic comprises about 10–90 parts by weight of crystalline polyolefin polymer, and, correspondingly, about 90–10 parts by weight of nylon, and the cured rubber comprises about 10–90 parts by weight of hydrocarbon rubber and, correspondingly, about 90–10 parts by weight of polar rubber, and at least 0.5 part by weight of a functionalized olefin polymer per 100 parts by weight of crystalline polyolefin polymer up to an amount where all of the polyolefin polymer is replaced by functionalized olefin polymer.

4,338,414

HOT MELT ADHESIVE COMPOSITIONS CONTAINING A POLYSTYRENE RESIN

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,369

Int. Cl.³ C08F 8/30; C08K 5/01; C08L 91/06

U.S. Cl. 525—193 9 Claims

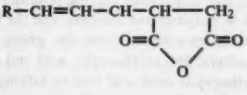
1. A hot melt adhesive composition consisting essentially of:

(a) 10–30 weight % of an alkenyl succinic anhydride,

(b) 20–60 weight % of an ethylene copolymer, and

(c) 10–40 weight % of a tackifying resin;

said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon

atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being a polystyrene resin having a Ring and Ball softening point of about 25°–125° C.

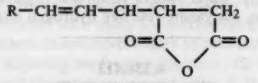
4,338,415

HOT MELT ADHESIVE COMPOSITIONS CONTAINING AN AROMATIC HYDROCARBON RESIN

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,400
Int. Cl.³ C08F *8/30;* C08K *5/01;* C08L *91/06*
U.S. Cl. 525—193 9 Claims

1. A hot melt adhesive composition consisting essentially of:
(a) 10–30 weight % of an alkenyl succinic anhydride,
(b) 20–60 weight % of an ethylene copolymer, and
(c) 10–40 weight % of a tackifying resin;
said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being an aromatic hydrocarbon resin having a Ring and Ball softening point of about 40°–160° C.

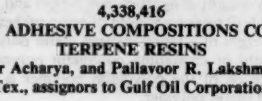
4,338,416

HOT MELT ADHESIVE COMPOSITIONS CONTAINING TERPENE RESINS

Vikramkumar Acharya, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 174,296, Jul. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,401
Int. Cl.³ C08F *8/30;* C08K *5/01;* C08L *91/06*
U.S. Cl. 525—193 9 Claims

1. A hot melt adhesive composition consisting essentially of:
(a) 10–30 weight % of an alkenyl succinic anhydride,
(b) 20–60 weight % of an ethylene copolymer, and
(c) 10–40 weight % of a tackifying resin;
said alkenyl succinic anhydride having the structure:



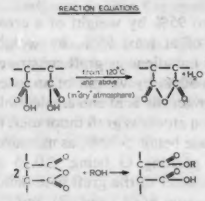
where R is an alkyl group containing at least about 15 carbon atoms; said ethylene copolymer having polymerized therein at least 40 weight % polymerized ethylene and the balance one or more polymerized monomers from the group consisting of vinyl acetate, acrylic and methacrylic acid and alkyl esters of acrylic and methacrylic acid; and said tackifying resin being a terpene resin having a Ring and Ball softening temperature of about 10°–150° C.

4,338,417

METHOD OF PREPARING A POLYMER MIXTURE, FORMED PRODUCTS OBTAINED THEREFROM AND POLYMER ALLOY

Adolf Heslinga, Hd Pijnacker, and Pieter J. Greidanus, Mk Leiden, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Continuation-in-part of Ser. No. 105,750, Dec. 20, 1979. This application Jun. 16, 1980, Ser. No. 159,649
Claims priority, application Netherlands, Dec. 22, 1978, 7812529; Dec. 5, 1979, 7908799
Int. Cl.³ C08L *33/02, 1/12;* A61K *47/00;* C08F *6/10*
U.S. Cl. 525—197 20 Claims



1. A polymer alloy comprising a first component which is at least one high molecular weight polymer having appendant anhydride groups, at least a portion of which have been protolyzed to form hydrogen atoms thereon, and a second component which is at least one high molecular weight polymer derived from a monomeric ester having vinyl unsaturation, and having reactive groups thereon, at least a portion of which are interacted with the aforementioned hydrogen atoms, so that the two components are linked by hydrogen bonds.

4,338,418

PROCESS FOR GRAFT COPOLYMERIZATION

Heinz Jost, Messel; Hellmuth Knoell, Reichenbach; Gerhard Markert, Ober-Ramstadt-Eiche, and Horst Pennewiss, Neu-Kranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 8,395, Feb. 1, 1979, Pat. No. 4,281,081. This application Dec. 15, 1980, Ser. No. 216,257
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805826
Int. Cl.³ C08F *255/02*
U.S. Cl. 525—281 6 Claims

1. The method for making a lubricating-oil additive which improves the viscosity index and has a dispersing and detergent action, which method comprises graft copolymerizing from 0.5 to 10 percent of N-vinyl pyrrolidone together with 0.1 to 3 percent of N-vinyl imidazole onto an oil-soluble polyolefin base polymer, said percentages being by weight of said base polymer.

4,338,419

PROCESS FOR TREATMENT OF HYDROGEL LENS WITH THIOLS

Donald R. Korb, Boston, and Paul M. Gallop, Chestnut Hill, both of Mass., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 10,991, Feb. 9, 1979, abandoned. This application Sep. 5, 1980, Ser. No. 184,596
Int. Cl.³ C08F *8/34;* G02C *7/04*
U.S. Cl. 525—350 4 Claims

1. A method for reducing the irritant effect resulting when a hydrogel polymer in the shape of a contact lens and formed by the copolymerization of a major amount of a monoester of an olefinic acid selected from the group of acrylic and meth-

acrylic acids having a single olefinic double bond and a polyhydric lower alcohol, and a minor amount of a polymerizable diester of one of said acids, wherein said diester contains at least two olefinic double bonds, is placed in prolonged contact with the living tissue of the eye and eyelid, said method comprising contacting for a suitable period of time said polymer with a solution containing hydrogen sulfide or a salt thereof.

4,338,420

ENHANCED WETTABILITY OF HOPE FILMS

Harold A. Arbit, Highland Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,755
Int. Cl.³ C08F *8/00, 8/06*
U.S. Cl. 525—388 **2 Claims**

1. A method for enhancing wettability of high density polyethylene film, that comprises subjecting said film to plasma surface treatment using oxygen or argon gas atmosphere.

4,338,421

RESIN COMPOSITION

Takashi Maruyama, Toyonaka, and Katsuji Ueno, Hirakata, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 8, 1980, Ser. No. 166,783
Claims priority, application Japan, Jul. 20, 1979, 54-92998
Int. Cl.³ C08L *77/02, 77/06, 71/04*
U.S. Cl. 525—397 **6 Claims**

1. A process for producing a resin composition which comprises melt-blending 30 to 95% by weight of a polyamide selected from the group consisting of 4-nylon, 6-nylon, 6,6-nylon, 12-nylon, and 6,10-nylon with 70 to 5% by weight of a polyphenylene oxide.

4,338,422

PREPARATION OF POLYESTERS AND POLY(ESTER-CARBONATES) BY ACIDOLYSIS OF AROMATIC POLYCARBONATES

Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,289
Int. Cl.³ C08L *69/00;* C08G *18/42*
U.S. Cl. 525—461 **9 Claims**

1. Process for the preparation of polyesters and poly(ester-carbonates) comprising preparing a reaction mixture of an aromatic or cycloaliphatic dicarboxylic acid and an aromatic polycarbonate in a molar ratio (r) of dicarboxylic acid/polycarbonate of about 0.05 to about 0.5, heating the mixture to at least 250° C. for a period of time sufficient to form a hydroxy-terminated prepolymer, and then reducing pressure and distilling out aromatic diol to yield polymer having an inherent viscosity of at least 0.35.

4,338,423

ALKALINE RESISTANT ORGANIC COATINGS FOR CORROSION SUSCEPTIBLE SUBSTRATES I

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1978, Ser. No. 938,671
Int. Cl.³ C08L *63/00*
U.S. Cl. 525—511 **6 Claims**

1. A solvent based, pigmented primer composition, especially suitable for use in retarding corrosion of susceptible substrates without requiring chromate inhibiting pigments, which is an intimate admixture of film forming ingredients which consist essentially of:

(A) A non-carboxy-ester linked epoxy reactant that has an average of aat least about two epoxy groups per molecule;

(B) An amine reactant selected from the group consisting of primary, secondary and primary and secondary amines having a total of up to about 20 carbons per amino nitrogen and comprising at least about 75 mole percent hydroxy amine containing one or more primary hydroxy groups removed at least one carbon from any amino nitrogen;

(C) Di or polyhydroxy compound having a boiling point exceeding about 150° C.;

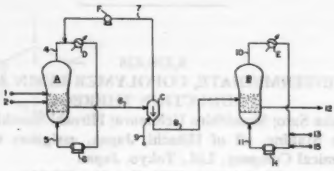
(D) An amine aldehyde resin at about 5–35% by weight of the combined weight of (A), (B) and (C) wherein the ratio of (A) to (B) is such that there is about 0.9–1 amine equivalent per 0.9–1 epoxy equivalent.

4,338,424

MULTI-STEP GAS-PHASE POLYMERIZATION OF OLEFINS

Yoshinori Morita, Iwakuni; Akifumi Kato, Ohtake, and Ryoichi Yamamoto, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,594
Claims priority, application Japan, May 27, 1980, 55-69558
Int. Cl.³ C08F *2/34, 10/00*
U.S. Cl. 526—65 **8 Claims**



1. In a process for polymerizing olefins in the gaseous phase in a first gas-phase polymerization zone and a second gas-phase polymerization zone, which are provided independently from each other, in the presence of a catalyst composed of a transition metal catalyst component and an organometallic compound of a metal of Groups I to III of the periodic table and in the co-presence of hydrogen gas while feeding the catalyst-containing polymer formed in the first zone to the second zone; the improvement wherein

(i) a dilution zone for diluting a feed flow from the first gas-phase polymerization zone which comprises a mixture of the polymer, the catalyst, the olefin gas and hydrogen gas by feeding a fresh supply of olefin gas thereto is provided in a feed passage for feeding said flow from the first gas-phase polymerization zone to the second gas-phase polymerization zone,

(ii) a part of the gas phase in said feed flow diluted in the dilution zone is recycled to the first gas-phase polymerization zone, and remainder is fed into the second gas-phase polymerization zone, and

(iii) in the second gas-phase polymerization zone, the hydrogen to olefin mole ratio is maintained lower than that in the first gas-phase polymerization zone.

4,338,425

PROCESS FOR PREPARING DIENE-CONTAINING RUBBERS HAVING IMPROVED GREEN STRENGTH

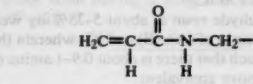
David J. Dougherty, Akron; Binnur Günesin, Uniontown, both of Ohio, and John W. Spiewak, Webster, N.Y., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 24, 1980, Ser. No. 132,736
Int. Cl.³ C08F *212/08, 212/34, 220/58*
U.S. Cl. 526—216 **7 Claims**

1. A process for preparing a diene-containing synthetic rubber, via emulsion polymerization, having improved green strength wherein the improvement comprises:

forming a copolymer of a conjugated diene monomer, having from about four to about 20 carbon atoms, and a vinyl monomer selected from the group consisting of monovinyl aro-

matic compounds having from eight to about 20 carbon atoms and acrylic compounds having from three to about five carbon atoms, in the presence of an N-(alkoxymethyl)acrylamide monomer having the formula



where R is selected from the group consisting of straight and branched alkyl chains having from 1 to about 20 carbon atoms, said monomers being polymerized at a temperature of from about 0° C. to about 30° C.,

to form a synthetic rubber wherein from about 0.5 to about 10 percent by weight thereof is derived from said N-(alkoxymethyl)acrylamide; from about 10 to about 90 percent by weight thereof is derived from said conjugated diene monomer and from about 1 to about 10 percent by weight thereof is derived from said monomer containing a vinyl group.

4,338,426

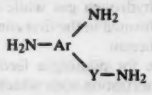
INTERMEDIATE, COPOLYMER RESIN AND PRODUCTION THEREOF

Hidetaka Sato; Shunichiro Uchimura; Hiroshi Suzuki, and Daisuke Makino, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,566
Claims priority, application Japan, Aug. 27, 1980, 55-118946
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—26 **16 Claims**

1. A polyimide-isoindroquinazolinedione-silicone copolymer resin produced by reacting

(a) a diaminoamide compound of the formula:



wherein Ar is an aromatic residue, Y is SO_2 or CO, and one of amino groups and the Y—NH_2 group are positioned at ortho position each other,

(b) a diaminosiloxane,

(c) a diamine, and

(d) a tetracarboxylic acid dianhydride,

to give a polyamide acid-silicone intermediate, which is then subjected to dehydration and ring closure.

4,338,427

PROCESS FOR PRODUCING POLYIMIDE-AMIDE-CARBOXYLIC ACID

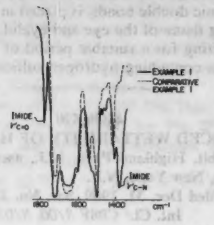
Iwao Maekawa, and Daisuke Makino, both of Hitachi, Japan, assignors to Hitachi Chemical Company Ltd., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,976
Claims priority, application Japan, Apr. 10, 1979, 54-43827
Int. Cl.³ C08G *18/32, 18/30*
U.S. Cl. 528—53 **10 Claims**

1. A process for producing a polyimide-amide-carboxylic acid which comprises

(a) reacting an aromatic diamine with an aromatic tetracarboxylic acid dianhydride in amounts of 1.5 to 2.0 moles of the dianhydride per mole of the diamine in the presence of an inert solvent, and

(b) reacting the resulting intermediate reaction product with an aromatic diisocyanate in about equivalent amounts at a



temperature of 50° to 100° C. while removing generated carbon dioxide from the reaction system.

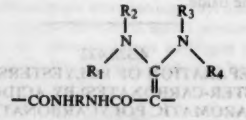
4,338,428

NOVEL POLYAMIDES FROM KETENE-AMINALS

Louis M. Alberino, Cheshire, and Dale F. Regelman, Wallingford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 14, 1981, Ser. No. 292,872
Int. Cl.³ C08G *18/32, 18/38, 69/08*
U.S. Cl. 528—73 **18 Claims**

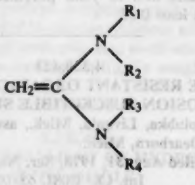
1. A polyamide having the recurring unit



wherein R is a divalent hydrocarbon radical, R_1, R_2, R_3, and R_4 when taken separately are independently selected from the group consisting of lower alkyl, aralkyl, and cycloalkyl, and when taken together as R_1 with R_2 and R_3 with R_4 with the respective nitrogen atoms to which they are attached represent independently a heterocyclic group having from 5 to 7 ring atoms.

10. A process for the preparation of a polyamide as defined in claim 1 said process comprising bridging together under anhydrous conditions,

A. a ketene-aminal having the formula



wherein R_1, R_2, R_3, and R_4 when taken separately are independently selected from the group consisting of lower alkyl, aralkyl, and cycloalkyl and when taken together as R_1 with R_2 and R_3 with R_4 with the respective nitrogen atoms to which they are attached represent independently a heterocyclic group having from 5 to 7 ring atoms; and

B. an organic diisocyanate $R(NCO)_2$ wherein R is a divalent hydrocarbon radical wherein said ketene-aminal and said diisocyanate are present in substantially stoichiometric proportions.

4,338,429

PROCESS FOR WORKING UP POLYCARBONATES

Volker Serini, Krefeld; John Goossens, Cologne; Ludwig Bottenbruch, Krefeld, and Dieter Freitag, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,015

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928444

Int. Cl.³ C08J *3/10*

U.S. Cl. 528—196 8 Claims

1. In the process for working up two-phase mixtures which are obtained in the course of the synthesis of polycarbonates by the two-phase boundary process, the improvement comprising one or more of the steps of

(i) promoting the separation of the acidic two-phase mixture resulting from the acidification of the organic phase obtained by separation from alkaline two-phase mixture into an organic phase and an aqueous phase by the addition of one or more cationic emulsifying agents and/or dispersing agents and, optionally, by the application of shear energy; and,

(ii) promoting the separation of the two-phase mixture resulting from water washing of the organic phase obtained by separation of the acidic two-phase mixture by adding one or more water-soluble organic anionic compounds to the wash water.

6. In the process for working up two-phase mixtures which are obtained in the course of the synthesis of polycarbonates characterized in that they contain at least 50% by weight units derived from 2,2-bis-(3,5-dimethyl-4-hydroxyphenyl)-propane, by the two-phase boundary process, the improvement in promoting the separation of the alkaline two-phase mixture, obtained upon completion of the synthesis reaction, into an organic phase and an aqueous phase consisting essentially of the addition of one or more cationic emulsifying agents and/or dispersing agents and optionally by the application of shearing energy.

4,338,430

PREPARATION OF POLYIMIDE COMPOSITIONS WITH CYCLIC PEROXYKETAL CATALYST

Robert Edelman, Staten Island, N.Y., assignor to Celanese Corporation, New York, N.Y.

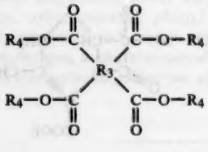
Filed Apr. 18, 1980, Ser. No. 141,701

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—222 17 Claims

1. In a process for preparing a polyimide composition by reacting a mixture of monomers comprising:

(a) at least one ester of the formula:



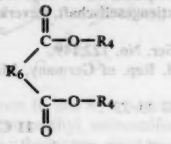
wherein R_3 is a tetravalent aryl radical, and R_4 is selected from the group consisting of a lower alkyl radical having 1 to 4 carbon atoms, and hydrogen, with two R_4 groups being alkyl and two R_4 groups being hydrogen;

(b) at least one amine of the formula:

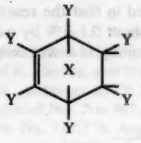
$H_2N—R_5—NH_2$

wherein R_5 is a divalent aryl radical; and

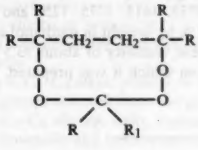
(c) at least one ester of the formula:



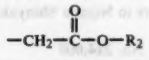
wherein R_4 is selected from the group consisting of a lower alkyl radical having 1 to 4 carbon atoms, and hydrogen with one R_4 group being alkyl and one R_4 group being hydrogen, and R_6 is a divalent radical of the formula:



wherein Y, which is the same or different, is selected from the group consisting of hydrogen, and methyl and X is an alkylidene radical of from 1 to 6 carbon atoms; said reaction being conducted by the application of heat to the mixture of said monomers in two stages, wherein in the first stage the monomer mixture is heated at a temperature of from about 250° to about 350° F. for a period of from about 0.5 to about 3 hours to form a prepolymer, and in the second stage the prepolymer is heated to a temperature sufficient to cross-link said prepolymer to form a polyimide, the improvement which comprises incorporating into the mixture of said monomers prior to reaction at least one peroxide catalyst of the formula:



wherein R, which is the same or different, is a lower alkyl group having from 1 to about 3 carbon atoms, and R_1 is an alkyl acetate group of the formula:



wherein R_2 is an alkyl group having from 1 to about 4 carbon atoms, in an amount of from about 0.5 to about 15%, by weight, based on the weight of the mixture of monomers.

4,338,431

PROCESS FOR THE PREPARATION OF NEOPENTYL GLYCOL POLYESTERS AND CO-POLYESTERS

Klaus König, Leverkusen; Wolfgang Reichmann, Duesseldorf, and Manfred Schönfelder, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 122,149

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907952

Int. Cl.³ C08G *63/22*

U.S. Cl. 528—272 **11 Claims**

1. A process for the preparation of neopentyl glycol polyesters and co-polyesters which comprises reacting:

(a) carboxylic acids, their anyhydrides or their esters with monohydric alcohols; with

(b) neopentyl glycol and, optionally, other glycols boiling at higher temperatures than neopentyl glycol, wherein neopentyl glycol is present in an amount between 20 and 100% by weight based on the total weight of neopentyl glycol and the higher boiling glycols,

accompanied by removal of the water of condensation or of the monohydric alcohol, characterized in that the reaction is carried out in the presence of from about 0.1–3% by weight, based on the polyester, of a glycol boiling at lower temperatures than neopentyl glycol.

4,338,432

INDICAN AND SUSPENSIONS AND GELS THEREOF AND THEIR USES

Christopher J. Lawson, and Kenneth C. Symes, both of Reading, England, assignors to Taires Development (N.A.) N.V., Netherlands Antilles

Filed Feb. 29, 1980, Ser. No. 126,311

Claims priority, application United Kingdom, Mar. 6, 1979, 7907786

Int. Cl.³ C12P *19/04*

U.S. Cl. 536—123 **3 Claims**

1. Indican, a polysaccharide consisting essentially of (1→3) glucose, (1→4) mannose, (1→4) rhamnose and (1→3 or 4)-O-(1-carboxyethyl)rhamnose units in a molar ratio of about 2:1:1-2:1 respectively; containing 12–15% by weight acetyl units; $[\alpha]_D^{20}$ about $-61°$; having principle absorption bands in the infra red band at 3390, 1735, 1615, 1375, 1250 and 1050 cm^{-1}; a solubility of at least 1% by weight in methanol and in ethylene glycol; and an inherent viscosity of about 33.5 dl/g; separated from the culture from which it was prepared.

4,338,433

MORANOLINE DERIVATIVES AND PROCESS FOR PREPARATION THEREOF

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakao; Yoshiaki Aoyagi, Kyoto; Yoji Ezure, Otsu; Yoshiaki Yoshikuni, Kyoto; Masahiro Yagi, Kusatsu, and Nobutoshi Ojima, Kyoto, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

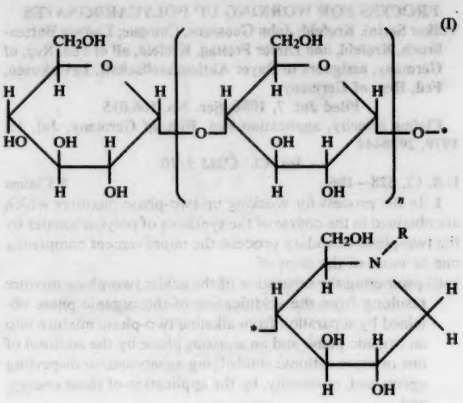
Filed Dec. 8, 1980, Ser. No. 214,009

Claims priority, application Japan, Dec. 8, 1979, 54-159417; Jun. 6, 1980, 55-76838; Sep. 22, 1980, 55-131949

Int. Cl.³ C08B *37/16*

U.S. Cl. 536—46 **11 Claims**

1. A moranoline derivative of the formula:



(I)

wherein n is an integer of from 0 to 7, and R is H or lower alkyl.

4,338,434

2-HETERO-ACETAMIDO-CEPHALOSPORINATES

Michael Preiss; Hans-Bodo König; Karl G. Metzger, all of Wuppertal, and Peter Feyen, Mettmann, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

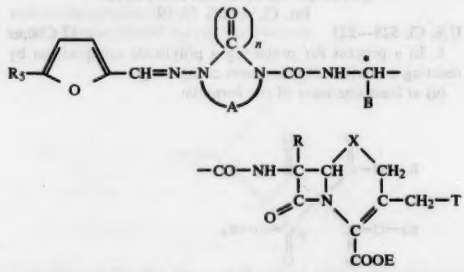
Division of Ser. No. 923,518, Jul. 10, 1978. This application Jun. 4, 1979, Ser. No. 45,474

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732283

Int. Cl.³ C07D *501/34*

U.S. Cl. 542—420 **6 Claims**

1. A compound of the formula



or a pharmaceutically usable salt thereof or a hydrate thereof, in which

R is hydrogen or lower alkoxy;

R_5 is hydrogen, lower alkyl, trifluoromethyl, halogen, amino, lower alkylamino, di-lower alkylamino, formylamino, acetylamino, CH_3OCONH, C_2H_5OCONH, CH_3SO_2NH, hydroxyl, methoxy, ethoxy, methylthio, ethylthio, CH_3SO_2, CH_3SO, HOOC, HO_3S, HCO, lower alkyl—CO, lower alkoxy-CO or CN;

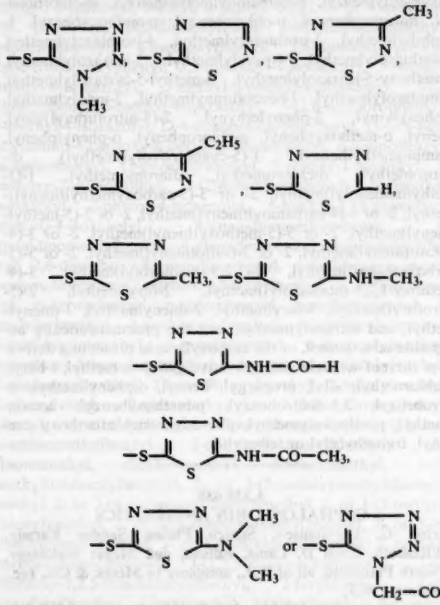
A is $—CH_2—CH_2—$; $—CH_2—CH_2—CH_2—$ or

n is 1 or 2;

B is a heterocyclic group connected through one of its carbon atoms and selected from the group consisting of pyrazolyl, imidazolyl, oxazolyl, oxidazolyl, 2-amino- and 2-oxo-Δ^4-thiazolinyl, tetrazolyl, sydnonyl, furyl, thienyl, pyrrolyl, thiazolyl, isothiazolyl, isoxazolyl, and thiadiazolyl, said heterocyclic group being unsubstituted or substituted by halogen, C_1–C_6- alkyl, cyano, sulpho or methylsulfonyl;

X is S, O, SO, SO_2 or CH_2;

T is hydrogen, C_1–C_4-alkyl—CO—O—, pyridinium, 4-carboxamidopyridinium, aminopyridinium, carbamoyloxy, azido, cyano or hydroxyl, or —S—phenyl or



optionally substituted by halogen, amino, lower alkylamino, di-lower alkylamino, lower alkyl, C_3–C_7-cycloalkyl, lower alkoxy, trifluoromethyl, phenyl, benzyl or carboxylic acid acylamino with 2 to 5 carbon atoms; and

E is hydrogen, a pharmaceutically usable salt-forming cation or a conventional protective group.

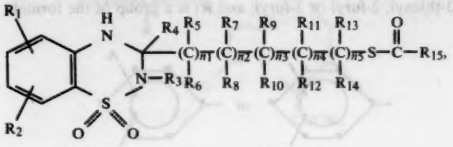
4,338,435

BENZOTHIADIAZINES HAVING DIURETIC ACTIVITY

Rudiger D. Haugwitz, Titusville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 1, 1981, Ser. No. 268,944
Int. Cl.³ C07D *285/30, 285/24*
U.S. Cl. 544—13 **9 Claims**

1. A compound having the formula



wherein R_1 and R_2 are each independently hydrogen, halogen, trifluoromethyl, aminosulfonyl, nitro, alkyl or alkoxy;

R_3 is hydrogen, alkyl, or phenylmethyl;

R_4 is hydrogen, alkyl, or phenyl, and R_{15} is alkyl, phenyl or phenylmethyl, or R_4 and R_{15} together are $—(CH_2)_m—$ wherein m is 1 or 2;

R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13} and R_{14} are each independently hydrogen, halogen, alkyl or phenyl;

n_1, n_2, n_3, n_4, and n_5 are each independently O or 1;

with the proviso that if R_4 and R_{15} together are $—(CH_2)_m—$, the sum of n_1, n_2, n_3, n_4, n_5 and m is 2 or 3.

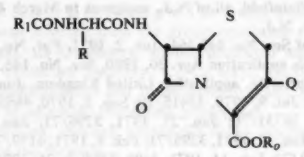
4,338,436

7-[2-[(SUBSTITUTED BENZOYL)AMINO]ACETAMIDO]CEPHALOSPORINS

David K. Herron, and William H. W. Lunn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 967,450, Dec. 7, 1978, which is a division of Ser. No. 717,774, Aug. 25, 1976, Pat. No. 4,319,028. This application Jun. 19, 1980, Ser. No. 161,193
Int. Cl.³ C07D *501/59*
U.S. Cl. 544—16 **20 Claims**

1. The compound of the formula



wherein

Q is chloro, bromo, methoxy or a group of the formula $—CH_2R_2$

wherein

R_2 is

(a) carbamoyloxy or C_1–C_4 alkylcarbamoyloxy;

(b) chloro or bromo; or

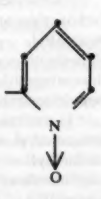
(c) a group of the formula $—SR_3$

wherein

R_3 is C_1–C_4 alkyl, phenyl or phenyl substituted with 1 or 2 groups selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, hydroxy, nitro, cyano, methanesulfonamido and trifluoromethyl;

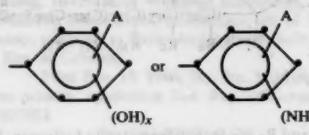
or

R_3 is a group of the formula



and R is cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 groups selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, hydroxy, protected hydroxy, nitro, cyano,

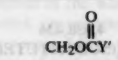
methanesulfonamido and trifluoromethyl; or R is 2-thienyl, 3-thienyl, 2-furyl or 3-furyl; and R_1 is a group of the formula



wherein

X is 1, 2, or 3, and y is 1 or 2, and wherein A is a substituent selected from the group consisting of hydrogen, halo, C_1–C_4 alkoxy, amino, protected amino, hydroxy, protected hydroxy, C_1–C_4 alkyl, nitro, cyano, methanesulfonamido and trifluoromethyl, and R_6 is hydrogen or an amino protecting group; and

R_0 is hydrogen, indanyl, phthalidyl or an acyloxymethyl group of the formula



wherein Y' is C_1–C_4 alkyl or phenyl; and when R_0 is hydrogen, the pharmaceutical acceptable non-toxic salts of the acids represented thereby.

4,338,437

CEPHALOSPORIN ANTIBIOTICS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,113

Claims priority, application United Kingdom, Jun. 16, 1970, 29158/70; Jul. 9, 1970, 33415/70; Sep. 3, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71; Apr. 30, 1971, 29158/71

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—021 **10 Claims**

1. The compound 3-A-7-loweralkyl-7-acylamido-3-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzyl)-oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxy-methyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-chloroethyl)-carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, (N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethylphenyl-carbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethyl-piperazinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R,2S-epoxypropyl-phosphonyloxymethyl, or pyridinium methyl; and acylamido is

wherein n is 0–4, Z is oxygen or sulfur, and R" is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methyldiphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinoxalinyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-guanidinomethylbenzyl, 4-guanidinobenzyl, 4-guanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl, p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranylmethyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl), difluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothienyl)methyl, 2- or 3-(sulfothienyl)methyl, 2- or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,338,438

CEPHALOSPORIN ANTIBIOTICS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,114

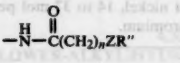
Claims priority, application United Kingdom, Jun. 16, 1970, 29158/71; Jul. 9, 1970, 33415/70; Sep. 30, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71; Apr. 30, 1971, 29158/71

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—21 **10 Claims**

1. The compound 3-A-7-loweralkylthio-7-acylamido-3-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxymethyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-chloroethyl)carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, (N-p-sulfophenylcarbamoyl)oxymethyl, p-carbox-

ymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperzinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and acylamido is



wherein n is 0–4, Z is oxygen or sulfur, and R'' is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methyldiphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinoxalinyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-guanidinomethylbenzyl, 4-guanidinobenzyl, 4-guanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl,p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranylmethyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl), difluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothienyl)methyl, 2- or 3-(sulfothienyl)methyl, 2- or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,338,439

7-[2-[(SUBSTITUTED BENZOYL]AMINO]ACETAMIDO]CEPHALOSPORINS

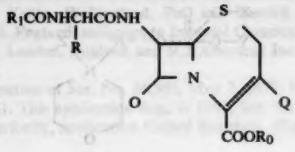
David K. Herron, and William H. W. Lunn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 717,774, Aug. 25, 1976, Pat. No. 4,319,028. This application Dec. 7, 1978, Ser. No. 967,450

Int. Cl.³ C07D *501/42*

U.S. Cl. 544—24 **14 Claims**

1. A compound of the formula



wherein Q is methyl or a group of the formula $—CH_2R_2$ whereiin

R_2 is

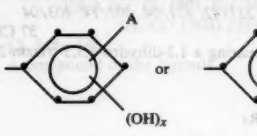
(a) C_2–C_4 alkanoyloxy;

(b) C_1–C_4 alkoxy; or

(c) pyridinium or monosubstituted pyridinium wherein the substituent is selected from the group consisting of C_1–C_4 alkyl, halo, hydroxy, hydroxymethyl, trifluoromethyl, carbamoyl, C_1–C_4 alkylcarbamoyl, carboxy, cyano, and acetyl; and

R is cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 groups selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, hydroxy, protected hydroxy, nitro, cyano, methanesulfonamido and trifluoromethyl; or R is 2-thienyl, 3-thienyl, 2-furyl or 3-furyl; and

R_1 is a group of the formula



wherein X is 1, 2, or 3, and y is 1 or 2, and wherein A is substituent selected from the group consisting of hydrogen, halo, C_1–C_4 alkoxy, amino, protected amino, hydroxy, protected hydroxy, C_1–C_4 alkyl, nitro, cyano, methanesulfonamido and trifluoromethyl, and R_6 is hydrogen or an amino protecting group; and

R_0 is hydrogen, indanyl, phthalidyl or an acyloxymethyl group of the formula

wherein Y' is C_1–C_4 alkyl or phenyl; and when R_0 is hydrogen, the pharmaceutical acceptable nontoxic salts of the acids represented thereby.

4,338,440

DIARYL PHOSPHATE MORPHOLINIUM SALTS

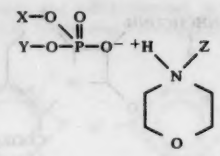
John J. Hawkins, Santa Ana, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 107,031, Dec. 26, 1979, Pat. No. 4,271,002, which is a continuation-in-part of Ser. No. 52,639, Jun. 27, 1979, Pat. No. 4,276,141, which is a continuation-in-part of Ser. No. 880,908, Feb. 24, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,717

Int. Cl.³ C07F *9/12*

U.S. Cl. 544—110 **7 Claims**

1. A compound having a formula



wherein

each X and Y is an alkyl(aryl), radical wherein said alkyl moiety consists of 1–12 carbon atoms; and said aryl moiety consists of 6, 10, 12 or 14 carbon atoms; and

Z is selected from a group consisting of alkyl radicals containing 1–12 carbon atoms; alkenyl and alkynyl radicals containing 4–12 carbon atoms; and cycloalkyl and cycloalkenyl radicals containing 6 to 12 carbon atoms.

4,338,441

TRIAZINONES

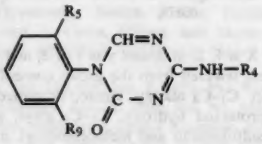
George H. Douglas, Malvern; William L. Studt, Harleysville; Chong M. Won, Warrington; Stuart A. Dodson, Lansdale, and Jerome J. Zalipsky, Melrose Park, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 959,611, Nov. 13, 1978, Pat. No. 4,246,409. This application Jan. 15, 1981, Ser. No. 225,198

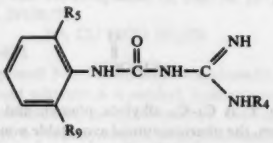
Int. Cl.³ C07D *251/42, 401/04, 401/14, 403/04*

U.S. Cl. 544—211 **37 Claims**

1. A process for preparing a 1,2-dihydro-1,3,5-triazin-2-one of the formula:



which comprises treating an amidinourea of the formula:



with an N,N-disubstituted alkanoic acid amide-acetal in the presence of hydrogen ion wherein R_5 and R_9 are each hydrogen, halo, lower alkyl, lower alkoxy or halo-lower alkyl; and R_4 is hydrogen, lower alkyl, lower alkoxy, or halo-lower alkyl.

4,338,442

PREPARATION OF 1,5-METHYLENE-3,7-DINITRO-1,3,5,7-TETRAAZACYCLOOCTANE

Richard A. Strecker, Randolph, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 15, 1981, Ser. No. 254,567

Int. Cl.³ C07D *251/72*

U.S. Cl. 544—215 **6 Claims**

1. A process for preparing 1,5-methylene-3,7-dinitro-1,3,5,7-tetraazacyclooctane (DPT) which comprises reacting nitrourea and formaldehyde in aqueous medium at a pH of about 2 to about 6–7 to cause the evolution of carbon dioxide gas and formation of an intermediate compound, and reacting the intermediate compound with aqueous ammonia and formaldehyde at a pH of about 6 to 7 to form DPT.

4,338,443

SYNTHESIS OF N-(2-HYDROXYETHYL)PIPERAZINE

Michael E. Brennan, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 15, 1980, Ser. No. 178,339

Int. Cl.³ C07D *295/08*

U.S. Cl. 544—401 **1 Claim**

1. A method for the synthesis of N-(2-hydroxyethyl)piperazine which comprises the step of effecting a simultaneous reductive alkylation-cyclization reaction of monoethanolamine and diethanolamine at a temperature of 125°–250° C. and under a pressure range of 300–800 psig in presence of a hydrogen atmosphere and a hydrogenation-dehydrogenation catalyst comprising 60 to 85 mol percent nickel, 14 to 37 mol percent copper, and 1–5 mol percent chromium.

4,338,444

PHENYL-HEXAHYDRO-2H-QUINOLIZINES

Rene Imhof, Wittnau, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

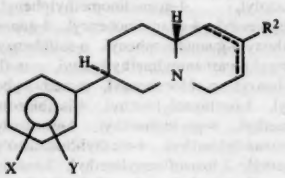
Division of Ser. No. 148,646, May 12, 1980, Pat. No. 4,272,627, which is a division of Ser. No. 85,096, Oct. 15, 1979, Pat. No. 4,236,010. This application Dec. 18, 1980, Ser. No. 217,864

Claims priority, application Switzerland, Oct. 13, 1978, 10654/78; Aug. 3, 1979, 7156/79

Int. Cl.³ C07D *455/02*

U.S. Cl. 546—138 **3 Claims**

1. A compound of the formula



VI

wherein X is fluorine, chlorine or trifluoromethyl; Y is hydrogen; R^2 is phenyl; and the dotted line denotes a double bond in the 1,2- or 2,3-position, its racemate or an enantiomer thereof.

4,338,445

N-(CARBONYLAMINO)-TETRAHYDROPYRIDYL DERIVATIVES

Edward E. Knaus; Linda A. Corleto, both of Edmonton, Canada, and Kinfe Redda, San Juan, P.R., assignors to Canadian Patents & Development Limited, Ottawa, Canada

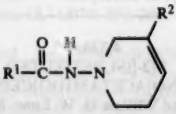
Filed Aug. 18, 1980, Ser. No. 179,249

Claims priority, application Canada, Aug. 31, 1979, 335090

Int. Cl.³ C07D *213/89*

U.S. Cl. 546—270 **9 Claims**

1. A compound of the formula



and their non-toxic pharmaceutically-acceptable salts, wherein R^1 is selected from cycloalkyl having 3–7 carbon atoms, aralkyl having 1–6 carbon atoms in the alkyl group, phenoxyalkyl having 1–6 carbon atoms in the alkyl group, phenyl when R^2 is $CONH_2$ or CON (lower alkyl)$_2$,

and phenyl substituted by halogen, by NH_2, by OH, by COOH, by $CONH_2$ or by CON (lower alkyl)$_2$;

and R^2 is selected from hydrogen, NH_2, OH, halogen, COOH, $CONH_2$ and CON (lower alkyl)$_2$.

2. A N-(Carbonylamino)-1,2,3,6-tetrahydropyridine as claimed in claim 1 wherein R^2 is hydrogen or diethylaminocarbonyl; and R^1 is a substituent selected from the group consisting of phenyl, phenylethyl, phenoxymethylene, cyclohexyl, 3,4-methylenedioxyphenylmethylene, chlorophenyl and dichlorophenyl, with the proviso that R^2 is diethylaminocarbonyl when R^1 is phenyl.

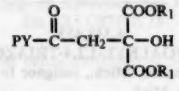
4,338,446

DI-(LOWER-ALKYL)HYDROXY-[2-OXO-2-(PYRIDINYL-)ETHYL]-PROPANEDIOATES

George Y. Lesher, Schodack, and William B. Dickinson, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 144,697, Apr. 28, 1980, Pat. No. 4,304,776.
This application Feb. 26, 1981, Ser. No. 238,483
Int. Cl.^{3} C07D *213/55*
U.S. Cl. 546—314 2 Claims

1. Di-(lower-alkyl) hydroxy[2-oxo-2-PY-ethyl]propanedioate of the formula



or pharmaceutically-acceptable acid-addition salt thereof, where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, and R_1 is lower-alkyl.

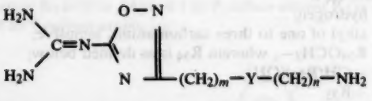
4,338,447

5-GUANIDINO-1,2,4-OXADIAZOLES

Tobias O. Yellin, Wallingford, Pa., and Derrick M. Mant, Bramhall, England, assignors to Imperial Chemical Industries Limited, London, England and ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 36,361, May 7, 1979, Pat. No. 4,242,351.
This application Aug. 1, 1980, Ser. No. 174,493
Claims priority, application United Kingdom, May 24, 1978, 21738/78
Int. Cl.^{3} C07D *271/06*
U.S. Cl. 548—133 2 Claims

1. An oxadiazole derivative of the following formula (III):



III

wherein

Y is an oxygen or sulphur atom, a direct bond or a methylene radical;

m is 0 to 4;

n is 1 to 4;

provided that when Y is a sulphur or oxygen atom, m is 1 to 4, and when Y is an oxygen atom, n is 2 to 4.

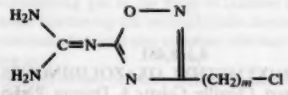
4,338,448

3-CHLOROALKYL-5-GUANIDINO-1,2,4-OXADIAZOLES

Tobias O. Yellin, Wallingford, Pa., and Derrick M. Mant, Bramhall, England, assignors to Imperial Chemical Industries Limited, London, England and ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 36,361, May 7, 1979, Pat. No. 4,242,351. This application Aug. 1, 1980, Ser. No. 174,495
Claims priority, application United Kingdom, May 24, 1978, 21738/78
Int. Cl.^{3} C07D *271/06*
U.S. Cl. 548—133 2 Claims

1. An oxadiazole derivative of the following formula (VI):



(VI)

wherein

m is 1 to 4.

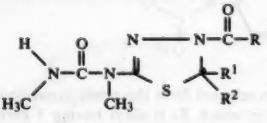
4,338,449

HERBICIDAL THIADIAZOLINES

Eddie V. P. Tao, and Gilbert S. Staten, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 15, 1981, Ser. No. 273,718
Int. Cl.^{3} C07D *285/12*
U.S. Cl. 548—140 9 Claims

1. A compound of the formula



wherein R is C_1–C_4 alkyl, 2-fluorophenyl, 2-chlorophenyl or 2-trifluoromethylphenyl;

R^1 and R^2 are independently hydrogen or C_1–C_2 alkyl, provided that no more than one of R^1 and R^2 is hydrogen.

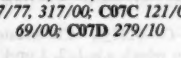
4,338,450

CARBAMATE-SULFENYL-CARBAMOYL FLUORIDE COMPOUNDS

Themistocles D. J. D'Silva, S. Charleston, W. Va., assignor to Union Carbide Corporation, Conn.

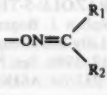
Filed Dec. 1, 1975, Ser. No. 636,629
Int. Cl.^{3} C07D *307/77, 317/00;* C07C *121/00, 121/50, 51/58, 69/00;* C07D *279/10*
U.S. Cl. 548—185 10 Claims

1. A compound of the formula:



wherein:

R and R′ are the same or different and are alkyl groups having from one to four carbon atoms and R″ is



wherein:

R_1 is hydrogen, alkyl, alkylthio or cyano; R_2 is alkyl,

alkylthio, alkoxy, alkanoyl or alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl or dialkylaminocarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, aminocarbonyl, alkylaminocarbonyl, or dialkylaminocarbonyl groups; or R_2 is phenyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl or an R_3CONH— or $R_3CON(alkyl)$-group, where R_3 is hydrogen, alkyl or alkoxy.

4,338,451

5-HYDROXYMETHYL OXAZOLIDINONES

Philippe L. Dostert, Chaville; Colette A. Douzon, Paris; Guy R. Bourgery, Colombes; Claude G. Gouret, Meudon; Gisele C. Mocquet, Paris, and Jean A. Coston, Garches, all of France, assignors to Delalande S.A., Courbevoie, France

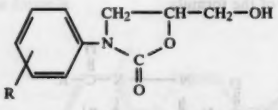
Division of Ser. No. 932,212, Aug. 9, 1978, Pat. No. 4,250,318. This application Aug. 1, 1980, Ser. No. 174,415

Claims priority, application France, Aug. 26, 1977, 77 26105; May 23, 1978, 78 15342

Int. Cl.[3] C07D *263/24;* A61K *31/42*

U.S. Cl. 548—232 **14 Claims**

1. A compound having the formula



in which R is selected from the group consisting of:

(1) p-SR_1 in which R_1 is alkyl having 5 carbon atoms or CH_2COCH_3;

(2) p-OR_2 in which R_2 is selected from the group consisting of isopentyl, 3,3-dimethylbutyl, cycloalkylmethyl in which the cycloalkyl has from 3 to 7 carbon atoms, cycloalkylethyl in which the cycloalkyl has 5 to 6 carbon atoms, penten-4-yl, 1-cycloalkenemethyl having 6 or 7 carbon atoms, 1-methyl cyclopentylmethyl, 1,4-cyclohexadiene methyl, 1,3-oxathiolan-2-yl methyl, 1,3-dithiocyclohex-2-yl methyl, tetrahydropyran-2-yl methyl, tetrahydropyran-3-yl methyl and tetrahydropyran-4-yl methyl;

(3) the group —O—CH_2—CO—R_7 situated in meta or para position and in which R_7 is alkyl having 1 to 3 carbon atoms; and

(4) the group —O—$(CH_2)_n$—CN situated in meta or para position and in which n is 1, 2, 3 or 4.

4,338,452

1-AND 2-(1-ALKYL-1H-TETRAZOL-5-YL-METHYL)-1H-TETRAZOL-5-THIOLS AND 1-CYANOMETHYL TETRAZOLE-5-THIOL

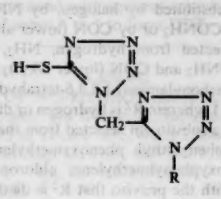
Allen S. Katner, and Stephen J. Bogard, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 17, 1980, Ser. No. 187,861

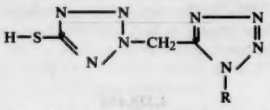
Int. Cl.[3] C07D *257/04;* A61K *31/43, 31/545*

U.S. Cl. 548—251 **7 Claims**

1. A compound selected from the group consisting of a compound of the formula

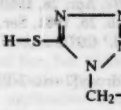


and a compound of the formula



wherein each R is hydrogen or C_1–C_3 alkyl.

7. The compound of the formula



4,338,453

AMINOALKYL-1,2,4-TRIAZOLES

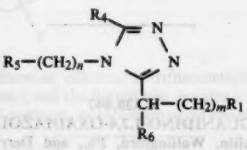
Martin Gall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 17, 1980, Ser. No. 187,920

Int. Cl.[3] C07D *249/08, 241/06, 233/10, 295/02*

U.S. Cl. 548—263 **16 Claims**

1. A compound according to formula 1



or a pharmacologically acceptable salt thereof,

wherein m is zero, one, 2 or 3;

wherein n is zero, one or 2,

wherein R_1 is:

(a) 1-piperidinyl substituted at the 3 or 4 position by R_{15}, wherein R_{15} is defined as below;

(b) —$N(CH_3)$—$(CH_2)_p$—R_{15}, wherein R_{15} and p are defined as below and wherein p is 1, 2, or 3; or

(c) —NH—$(CH_2)_p$—R_{15} wherein R_{15} is as defined as below and wherein p is 1, 2, or 3;

wherein R_4 is:

(a) hydrogen;

(b) alkyl of one to three carbon atoms, inclusive;

(c) $R_{54}OCH_2$—, wherein R_{54} is as defined below;

(d) —$CH(R_{35})(OH)$;

(e) —R_{35}

(f) —SH;

(g) $S(O)_qR_{17}$, wherein q is zero, one or two; and R_{17} is as defined below;

(h) 1-hydroxy-1-cyclohexyl; or

(i) 1-cyclohexen-1yl;

wherein R_5, R_{15}, R_{25}, and R_{35} are the same or different and are

(i) 2, 3, or 4 pyridinyl, or

(ii) phenyl substituted by zero to 2 chloro, fluoro, bromo, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, or

(iii) phenyl substituted by one trifluoromethyl and zero to one of the previous phenyl substituents;

wherein R_6 is:

(a) hydrogen;

(b) $—OR_{54}$;

(c) alkanoyloxy of from one to 3 carbon atoms; or

(d) alkyl of from one to 3 carbon atoms; with the proviso that when m is zero, R_6 does not contain oxygen; and

wherein R_{17} is methyl, phenyl, benzyl, or 2-phenylethyl; and wherein R_{54} is hydrogen or alkyl of one to 3 carbon atoms; or an enantiomer when R_4 is $—CH(R_{35})OH$ or when R_6 is not hydrogen or diastereomer when R_4 is $—CH(R_{35})OH$ and R_6 is not hydrogen of such compound.

4,338,454

PENTACHLOROPHENYL 3-(TRIETHOXYSILYL) PROPYL ETHER

John P. Wesson, Croton-on-Hudson, N.Y.; Thomas C. Williams, Ridgefield, Conn., and Robert G. Eagar, Jr., Yorktown Heights, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,603

Int. Cl.³ C07F 7/18

U.S. Cl. 556—445 **1 Claim**

1. The compound pentachlorophenyl 3-(triethoxysilyl)propyl ether.

4,338,455

NOVEL PROCESS AND INTERMEDIATES USEFUL IN THE PREPARATION OF SYMPATHOMIMETIC AMINES

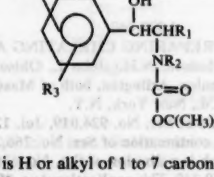
Jacob A. Zupan, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 11, 1981, Ser. No. 233,457

Int. Cl.³ C07C 125/065

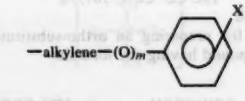
U.S. Cl. 560—29 **18 Claims**

1. A compound of the general formula



(V)

wherein R_1 is H or alkyl of 1 to 7 carbon atoms; R_2 is H, alkyl of 1 to 7 carbon atoms, or



wherein m is zero or one, the alkylene portion contains 1 to 5 carbon atoms, and X is H or $—OR_4'$ wherein R_4' is identical to R_4 as defined below; R_3 is H, Cl, $—CH_2OH$ or $—OR_4''$ wherein R_4'' is identical to R_4 as defined below; and R_4 is an acyl radical.

4,338,456

METHOD OF PRODUCING BIPHENYLTETRACARBOXYLIC ESTERS

Hiroshi Itatani, Chiba; Akinori Shiotani, Ichihara, and Akiyoshi Yokota, Unokemachi, all of Japan, assignors to Ube Industries, Ltd., Chiba, Japan

Continuation-in-part of Ser. No. 151,818, May 21, 1980, Pat. No. 4,292,435. This application Feb. 18, 1981, Ser. No. 235,744

Int. Cl.³ C07C 67/343

U.S. Cl. 560—96 **24 Claims**

1. A method for producing biphenyltetracarboxylic esters, comprising oxidative coupling, at a temperature of from 100° C. to 300° C., an orthophthalic diester by flowing a molecular oxygen-containing gas in the form of bubbles through a reaction mixture containing the orthophthalic diester and a catalyst which consists of at least one member selected from the group consisting of:

(A) mixtures of one or more palladium salts with 2,2'-bipyridyl in a molar amount of 0.9 to 4 times that of said palladium salt, and;

(B) chelating reaction products of one or more palladium salts with 2,2'-bipyridyl in a molar amount of 0.9 to 2.5 times that of said palladium salt.

4,338,457

COMPOSITION AND PROCESS

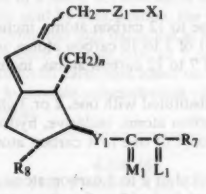
Paul A. Aristoff, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 28, 1980, Ser. No. 125,608

Int. Cl.³ C07C 177/00, 57/26

U.S. Cl. 560—119 **2 Claims**

1. A carbacyclin analog of formula VII



VII

wherein n is the integer 1 or 2;

wherein Y_1 is trans—CH=CH—, cis—CH=CH—, $—CH_2C-H_2—$, or —C≡C—;

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_1 is

(1) $—(CH_2)_g—C(R_2)_2$, wherein g is 0, 1, 2, or 3 and R_2 is hydrogen or fluoro, or

(2) trans-CH=CH—;

wherein R_7 is

(1) $—(CH_2)_m—CH_3$, wherein m is an integer from one to 5, inclusive;

(2) phenoxy;

(3) phenoxy substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(4) phenyl;

(5) phenyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(6) benzyl, phenylethyl, or phenylpropyl; or

(7) benzyl, phenylethyl, or phenylpropyl substituted by

one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(8) cis—CH=CH—CH_2—CH_3; or

(9) —$(CH_2)_2$—CH(OH)—CH_3;

with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein R_8 is hydroxy, hydroxymethyl, or hydrogen;

wherein M_1 is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl; and

wherein X_1 is

(1) —$COOR_1$, wherein R_1 is

(a) hydrogen;

(b) alkyl of one to 12 carbon atoms, inclusive;

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(d) aralkyl of 7 to 12 carbon atoms, inclusive;

(e) phenyl;

(f) phenyl substituted with one, 2 or 3 chloro or alkyl of one to 3 carbon atoms;

(g) phenyl substituted in the para position by

(i) —NH—CO—R_{25},

(ii) —CO—R_{26},

(iii) —O—CO—R_{27}, or

(iv) —CH=N—NH—CO—NH_2 wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is methyl, phenyl, —NH_2, or methoxy; and R_{27} is phenyl or acetamidophenyl; inclusive, or

(h) a pharmacologically acceptable cation;

(2) —CH_2OH;

(3) —COL_4, wherein L_4 is

(a) amino of the formula —$NR_{21}R_{22}$, wherein R_{21} and R_{22} are

(i) hydrogen;

(ii) alkyl of one to 12 carbon atoms, inclusive;

(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(iv) aralkyl of 7 to 12 carbon atoms, inclusive;

(v) phenyl;

(vi) phenyl substituted with one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(vii) carboxyalkyl of 2 to 5 carbon atoms, inclusive;

(viii) carbamoylalkyl of 2 to 5 carbon atoms, inclusive;

(ix) cyanoalkyl of 2 to 5 carbon atoms, inclusive;

(x) acetylalkyl of 3 to 6 carbon atoms, inclusive;

(xi) benzoylalkyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;

(xiii) pyridyl;

(xiv) pyridyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;

(xv) pyridylalkyl of 6 to 9 carbon atoms, inclusive;

(xvi) pyridylalkyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy or alkyl of one to 3 carboxy atoms, inclusive;

(xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;

(xviii) dihydroxyalkyl of one to 4 carbon atoms, or

(xix) trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamino selected from the group consisting of

(i) pyrrolidino,

(ii) piperidino,

(iii) morpholino,

(iv) piperazine,

(v) hexamethyleneimino,

(vi) pyrrolino,

(vii) 3,4-didehydropiperidinyl, or

(viii) pyrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl substituted by one or 2 alkyl of one to 12 carbon atoms, inclusive;

(c) carbonylamino of the formula —$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is other than hydrogen, but otherwise as defined above;

(d) sulfonylamino of the formula —$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined in (c); and

(4) —$CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, or the pharmacologically acceptable acid addition salts thereof when X_1 is —$CH_2NL_2L_3$.

4,338,458

CYCLOPENTANE DERIVATIVES USEFUL AS PERFUMING AGENTS

Karl-Heinrich Schulte-Elte, Onex, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 104,404, Dec. 17, 1978, Pat. No. 4,280,934, which is a continuation of Ser. No. 808,688, Jun. 21, 1977, abandoned. This application Mar. 19, 1981, Ser. No. 245,519

Claims priority, application Switzerland, Jun. 30, 1976, 8343/76

Int. Cl.[3] **C07C** *69/608*

U.S. Cl. 560—122 **1 Claim**

1. Allyl cyclopentylidene acetate.

4,338,459

USE OF ALKYLFORMAMIDE AND ACETAMIDE IN PREPARING α-ACETYL-α′-METHYLSUCCINATE ESTER

Francis L. Shenton, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 5, 1981, Ser. No. 240,721

Int. Cl.[3] **C07C** *67/00, 69/716*

U.S. Cl. 560—176 **8 Claims**

1. A process for preparing an α-acetyl-α′-methylsuccinate diester which comprises reacting an ester of acetoacetic acid with an ester of α-halopropionic acid wherein halo is chloro or bromo in a substantially anhydrous liquid solvent mixture of (a) a nonpolar, aprotic organic liquid having a dielectric constant below about 11 at 25° C. and (b) between about 1.7 to about 3.0 moles of a dipolar, aprotic organic liquid solvent selected from the group consisting of a di-C_1 to C_4-alkylformamide and a di-C_1 to C_4-alkylacetamide relative to the mole content of the acetoacetate ester in the mixture at a temperature of from about 50° C. to the reflux temperature of the mixture in the presence of a phase transfer agent, a catalytic amount of an iodide ion and a solid form deprotonating base for a time sufficient to form the diester.

4,338,460

PROCESS FOR PREPARING CHELATING AGENTS

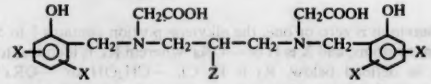
Roger R. Gaudette, Hudson, N.H.; John L. Ohlson, Bedford, and Patricia M. Scanlon, Arlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 924,019, Jul. 12, 1978, abandoned, which is a continuation of Ser. No. 766,285, Feb. 7, 1977, abandoned, which is a division of Ser. No. 630,792, Nov. 11, 1975, Pat. No. 4,069,249. This application Aug. 20, 1980, Ser. No. 179,805

Int. Cl.[3] **C07C** *101/72*

U.S. Cl. 562—448 **7 Claims**

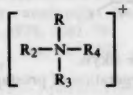
1. A process for preparing an ortho-substituted phenolic amino acid compound having the formula:



wherein:

(a) Z is H or OH; and

(b) each X is selected from a group consisting of hydrogen; an alkyl group having 1–4 carbon atoms; —COOH; and —SO_3M, wherein M is selected from a group consisting of an alkali metal ion, ½ of an alkaline earth metal ion, and an ammonium ion having the formula

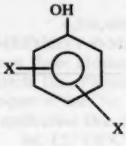


in which each of R_1, R_2, R_3 and R_4 is selected from a group consisting of hydrogen, an alkyl group having 1–4 carbon atoms, and a hydroxyalkyl group having 1–4 carbon atoms; said process comprising:

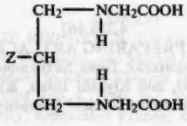
(i) forming a resulting mixture by admixing:

(a) an inert reaction medium selected from a group consisting of water, methyl alcohol, ethyl alcohol, isopropyl alcohol, n-propyl alcohol, an admixture of water and the alcohol, acetic acid, and an admixture of water and acetic acid;

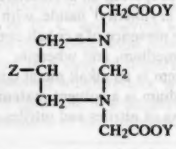
(b) a phenol or mixture of phenols, each having the formula



(c) an acid having the formula



or a source of this acid, said source having the formula



in which Y is an alkali metal ion, ½ of an alkaline earth metal ion, or the ammonium ion having the formula

(d) a formaldehyde source selected from a group consisting of an aqueous formaldehyde solution, trioxane, and paraformaldehyde; and

(ii) maintaining the resulting mixture at a temperature and for a time effective for forming the compound, and at a pH of about 2 to about 6, the inert reaction medium being provided in an amount effective for dissolving the phenol.

4,338,461

PROCESS FOR PRODUCING D-2-AMINO-2-(1,4-CYCLOHEXADIENYL)ACETIC ACID

Kunio Unuma; Hiroyasu Saito; Jihei Inomata, all of Iwaki, and Saburo Takizawa, Morioka, all of Japan, assignors to Nippon Kasei Chemical Co., Ltd., Fukushima, Japan

Filed Mar. 19, 1981, Ser. No. 245,437

Claims priority, application Japan, Apr. 21, 1980, 55-52590

Int. Cl.³ C07C *99/00*

U.S. Cl. 562—507 **2 Claims**

1. A process for producing D-2-amino-(1,4-cyclohexadienyl) acetic acid, comprising the steps of reducing D-2-amino-phenylacetic acid with metallic sodium in the presence of a mixture of liquid ammonia and water and adding an acidic substance to the resultant aqueous solution, the weight ratio of liquid ammonia to water in said mixture being in the range of 65:35 to 82:18.

4,338,462

SILVER-CATALYZED OXIDATION OF METHACROLEIN TO METHACRYLIC ACID

Gregory A. Wheaton, Swedesboro, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 9, 1980, Ser. No. 157,623

Int. Cl.³ C07C *51/25, 57/045*

U.S. Cl. 562—533 **7 Claims**

1. In the process for oxidizing methacrolein to a methacrylic acid salt with oxygen or oxygen mixed with an inert gas in a strongly alkaline medium at a temperature of 0° to 100° C. and in the presence of a finely divided silver catalyst and recovering methacrylic acid by acidification, the improvement which comprises carrying out said oxidation at a pH of greater than 12.5 in the presence of from 0.01 to 5 percent by weight of dissolved alkali metal carbonate based on the alkaline medium which has a hydroxide concentration of not more than 50 percent by weight.

4,338,463

PROCESS FOR THE PRODUCTION OF UNSATURATED ACIDS AND ESTERS

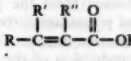
Wilfrid G. Shaw, Lyndhurst, and Christos Paparizos, Willowick, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 3, 1980, Ser. No. 193,784

Int. Cl.³ C07C *51/377, 57/05, 67/317, 69/54*

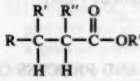
U.S. Cl. 562—599 **11 Claims**

1. A vapor-phase process for the production of a compound of the formula:



(III)

the process comprising contacting in the presence of molecular oxygen a compound of the formula:



(II)

where R–R‴ are independently hydrogen or a C_1–C_4 alkyl radical, with a catalytic amount of a catalyst of the empirical formula:

$$Mo_{12}P_{0.1\text{-}3}Te_{0.01\text{-}2}M_{0.1\text{-}3}M'_{0.01\text{-}3}X_aO_b \quad (I)$$

where

M is at least one of K, Rb and Cs;
M' is a combination of Cu and V;
X is at least one of Ba, Zn, Ga, Nb, Cd, Ti, Ca, Bi, Mg, Ta, Zr, Ce, Ni, Co, Cr, Fe and Tl when a>0;
a is a number of 0 to about 2; and
b is a number that satisfies the valence requirements of the other elements present.

4,338,464

REMOVAL OF BROMOBUTANONE FROM ACETIC ACID

Jon J. Harper, and Martin A. Zeitlin, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 17, 1979, Ser. No. 104,088
Int. Cl.³ C07C *51/43*
U.S. Cl. 562—608 **6 Claims**

1. The method of decreasing the 3-bromo-2-butanone content of the debutanized liquid effluent containing mainly acetic acid and water obtained from the catalytic oxidation of liquid n-butane with oxygen at a temperature of from 120° C. up to 230° C. and a gauge pressure of from 50 up to 110 kg/cm^2 in the presence of catalysis provided by a combination of the bromide ion with a cobalt ion or a mixture of cobalt and manganese ions; which method comprises subjecting said debutanized liquid effluent as feed to a combination of fractional crystallizations and washing to remove mother liquor adhering to the crystalline product wherein the feed enters a crystallization zone cooled to the freezing point temperature of the acetic acid-water composition of the debutanized liquid effluent feed thereby forming in addition to acetic acid-water crystals a waste liquor having a 3-bromo-2-butanone content higher than in said feed, separating the waste liquor from the crystals and removing any of it adhering to the crystals by warming the crystals to partially melt them and permitting the remaining crystals to contact such melt before being separated from the melt.

4,338,465

SYNTHESIZED SCENT

Arthur F. Isbell, Bryan, Tex., assignor to Meiller Research, Inc., College Station, Tex.

Division of Ser. No. 885,941, Mar. 13, 1978, Pat. No. 4,213,875. This application Aug. 28, 1979, Ser. No. 70,354
Int. Cl.³ C07C *148/00, 149/08*
U.S. Cl. 568—69 **10 Claims**

1. A method for synthesizing a scent substantially similar to that produced in the anal glands of skunks and useful to prevent wild animals from detecting the presence of a user in their natural environments, comprising the steps of:
(a) providing a first component comprising an aqueous solution of a trans-crotyl isothiuronium salt;
(b) providing a second component comprising an aqueous solution of a first base selected from the group consisting of sodium hydroxide, potassium hydroxide and lithium hydroxide and a second base selected from the group consisting of sodium carbonate and potassium carbonate, said second base present in an effective amount for increasing the degree and rate of production of the scent when said first component is mixed with said second component; and
(c) contacting said first component with said second component, thereby producing trans-2-butene-1-thiol.

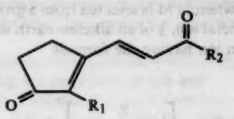
4,338,466

PROSTAGLANDIN ANALOGS AND PROCESS OF PREPARATION THEREOF

George L. Nelson, Narberth, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1981, Ser. No. 250,366
Int. Cl.³ C07C *49/597, 45/45*
U.S. Cl. 568—343 **10 Claims**

1. A prostaglandin analog for oligomerization to mixtures exhibiting protection of oxidative phosphorylation of degenerated mitochondria of the formula:



wherein R_1 and R_2 are alkyls.

3. A process for preparation of prostaglandin analogs, comprising the steps of:
O-alkylating a 2-alkylcyclopentane-1,3-dione to form an enol ether;
reacting the enol ether with an effective amount of vinyl magnesium bromide in ether to form a vinyl compound;
oxidizing the vinyl compound with effective amounts of osmium tetraoxide and sodium periodate in aqueous ether to form an aldehyde; and
reacting the aldehyde with an effective amount of a dimethyl (2-oxoalkyl)phosphonate to form a crude product containing the precursor.

4,338,467

PROCESS FOR PREPARING ARYLACETALDEHYDES

Tetsuo Takano, Takatsuki; Gohu Suzukamo, Ibaraki; Masaru Ishino, Takatsuki, and Kiyoshi Ikimi, Kyoto, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 10, 1981, Ser. No. 233,148
Int. Cl.³ C07C *45/49*
U.S. Cl. 568—428 **13 Claims**

1. A process for preparing an arylacetaldehyde by reacting the corresponding arylmethyl halide with carbon monoxide and hydrogen in the presence of a cobalt compound and a basic reagent in a liquid medium, and wherein:
a. said basic reagent is an alkali metal compound;
b. said liquid medium is a solvent system selected from the group consisting of nitriles and nitriles mixed with hydrocarbons;
c. said arylmethyl halide is a monocyclic or polycyclic, condensed or non-condensed aromatic compound having at least one halomethyl group on the aromatic ring which may be substituted with one or more substituents selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy and halogen;
d. said cobalt compound is elected from the group consisting of carboxylates, hydroxides, halides, oxides and nitrates of cobalt and cobalt complexes of carbon monoxide, having phosphine or amine as a ligand;
e. said alkali metal compound is an oxide, hydroxide, carbonate, phosphate, silicate or borate of an alkali metal;
f. said reaction is carried out under a pressure of 10 atm or more; and
g. said reaction is carried out at a temperature range of from 50° to 200° C.

4,338,468

α-PROP-1-YNYL-3-PHENOXYBENZYL ALCOHOLS

Saleem Farooq, Ettingen; Peter Ackermann, Reinach; Jozef Drabek, Oberwil; Laurenz Gsell, Basel; Odd Kristiansen, Möhlin, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

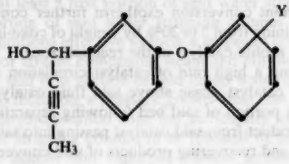
Continuation-in-part of Ser. No. 49,390, Jun. 18, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 216,223

Claims priority, application Switzerland, Jun. 27, 1978, 6994/78; Apr. 19, 1979, 3681/79

Int. Cl.³ C07C *43/263*

U.S. Cl. 568—637 **6 Claims**

1. A α-prop-1-ynyl-3-phenoxybenzyl alcohol of the formula



wherein Y represents hydrogen, halogen, C_1–C_4alkyl or C_1–C_3alkoxy.

4,338,469

8-METHOXY-P-MENTHANE

James E. Lyons, and Peter Hosler, both of Wallingford, Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 714,206, Aug. 23, 1976, abandoned. This application Dec. 22, 1977, Ser. No. 863,569

Int. Cl.³ C07C *43/18*

U.S. Cl. 568—666 **1 Claim**

1. The composition of matter, 8-methoxy-p-menthane.

4,338,470

SOLID BISPHENOL F PARTICULATES

Robert Granjon, Roussilon, and Michel Fournier, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 4, 1980, Ser. No. 175,008

Claims priority, application France, Aug. 3, 1979, 79 20347

Int. Cl.³ C07C *39/16*

U.S. Cl. 568—723 **16 Claims**

1. A process for the preparation of solid bisphenol F particulates, comprising dispersing droplets of technical grade bisphenol F in a chemically inert liquid medium having a boiling point in excess of 70° C. and having a temperature of at least 70° but less than the boiling point thereof, said liquid medium being maintained in a state of dispersing agitation, and then cooling the dispersion which results, while continuing to maintain said state of agitation, to a temperature such as to solidify the dispersed droplets of said bisphenol F into solid particles.

4,338,471

PROCESS FOR PREPARING PHENOL

Sumio Umemura; Ryozo Kitoh, and Taizo Uda, all of Ube, Japan, assignors to Ube Industries, Inc., Ube, Japan

Filed Dec. 17, 1980, Ser. No. 217,116

Claims priority, application Japan, Dec. 19, 1979, 54-164022

Int. Cl.³ C07C *37/58, 39/04*

U.S. Cl. 568—802 **12 Claims**

1. In a process for preparing phenol wherein benzene is reacted in the vapor phase with oxygen at an elevated temperature in the presence of a catalyst, said improvement comprising effecting the oxidation of benzene in the presence of an alcohol and by using as the catalyst a composition consisting essentially of metal oxides and represented by the formula:

$$M_aAg_bP_cO_d$$

wherein M is an element selected from the group consisting of zinc, titanium, zirconium, tin, bismuth and vanadium, Ag is silver, P is phosphorus and O is oxygen, and each of the subscripts "b" and "c" is a positive number indicating an atomic ratio of the respective element to the element M and falling within the following ranges: b=0.005 to 5 and c=0 to 6, provided that a=1, and "d" is a positive number satisfying the average valency of the respective elements.

4,338,472

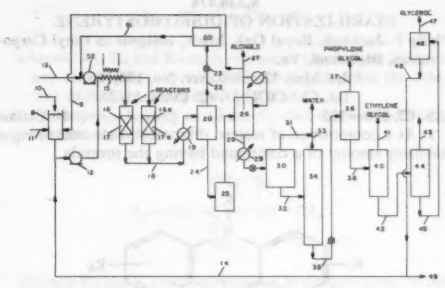
CATALYTIC HYDROGENOLYSIS OF ALDITOLS TO PRODUCE POLYOLS

Amalesh K. Sirkar, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Jan. 21, 1981, Ser. No. 227,000

Int. Cl.³ C07C *31/22*

U.S. Cl. 568—861 **11 Claims**



1. A process for metallic catalytic hydrogenolysis of an alditol solution to produce glycerol, comprising the steps of:

(a) providing a feedstream solution containing at least about 15 W % alditol and adding an alkaline promotor material to the feedstream sufficient to provide a pH within the range of 7–14;

(b) preheating the feed solution and hydrogen gas to at least about 200° F. temperature, and introducing the heated feedstream mixture into a fixed bed reaction zone containing a particulate high activity stabilized nickel catalyst containing 50–65 W % porous nickel on silica support and having 4–12 mesh (0.132–0.066 inch) particle size (U.S. Sieve Series);

(c) maintaining the reaction zone conditions within the range of 400°–510° F. temperature, 1200–2000 psig hydrogen partial pressure and 1.5–3.0 liquid hourly space velocity (LHSV), and containing the catalyst age by regeneration following at least about 20 hours use when said catalyst is washed with a water-methanol solution to remove deposits and then contacted with flowing hydrogen at 500°–650° F. temperature for at least about 2 hours for achieving at least about 30 W % conversion of the alditol to glycerol and glycol products;

(d) withdrawing from the reaction zone a stream containing glycerol and glycols and phase separating said stream into a gaseous portion and a liquid portion;

(e) distilling said liquid portion to remove alcohols and water;

(f) distilling the remaining stream at sub-atmospheric pressure to remove glycols and produce higher purity glycerol product, and a heavy bottoms liquid stream containing unconverted alditols; and

(g) recycling at least a portion of said bottoms stream to the reaction zone for further catalytic conversion of alditols to produce mainly glycerol product.

4,338,473

METHOD FOR REMOVING NITROSATION AGENT(S) FROM A NITRATED AROMATIC COMPOUND

Kurt Habig, Mörfelden; Konrad Baessler, Frankfurt am Main; Lothar Schulz, Eppstein, and Heinz Schütte, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,286

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920448; Mar. 4, 1980, 3008243

Int. Cl.[3] C07C *76/02, 79/10, 79/12*

U.S. Cl. 568—933 11 Claims

1. A method for removing one or more nitrosation agents from 4-chloro-3,5-dinitrobenzotrifluoride by treatment with water, which comprises contacting water, without adding any other substance, with 4-chloro-3,5-dinitrobenzotrifluoride and one or more nitrosation agents, and removing water from the 4-chloro-3,5-dinitrobenzotrifluoride such that the removed water is at least partially in vapor form.

4,338,474

STABILIZATION OF DIBROMOSTYRENE

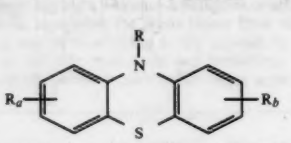
Philip F. Jackisch, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 13, 1980, Ser. No. 130,186

Int. Cl.[3] C07C *17/42;* C09K *15/26*

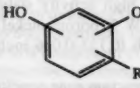
U.S. Cl. 570—105 10 Claims

1. As a composition of matter, dibromostyrene containing a stabilizer amount of a compound having the formula



wherein each R is alike or different and is selected from the class consisting of hydrogen and lower alkyl groups of up to about 10 carbon atoms and a and b are independently equal to zero or a positive whole number of from 1 to 2.

4. A composition of claim 1 wherein said stabilizer is admixed with a stabilizer enhancing amount of a dihydroxyphenol



wherein R is a lower alkyl group of up to about 4 carbon atoms.

4,338,475

CONVERTING ALCOHOLS TO HYDROCARBONS

Nicholas D. Pennington, Pennington, and James H. Haddad, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 89,705, Oct. 30, 1979, Pat. No. 4,251,484. This application Oct. 3, 1980, Ser. No. 193,675

Int. Cl.[3] C07C *1/20*

U.S. Cl. 585—408 8 Claims

1. A method for converting reactant materials selected from the group consisting of lower alcohols, ether derivatives thereof, oxygenates of synthesis gas and any one or a combination thereof which comprises,

passing the reactant material in vaporous, liquid or a mixture thereof condition upwardly through a fluid bed of zeolite catalyst particles characterized as providing a silica/alumina ratio of at least 12, a pore opening of at least 5 Angstroms and a Constraint Index within the range of 1 to 12 at a temperature constrained within the range of about 600° F. to about 775° F. under pressure and space velocity conditions selected to achieve at least 95% conversion of a methanol feed to hydrocarbon products including gasoline boiling range products,

said temperature constrained limits achieved at least in part by a plurality of heat exchange tubes immersed in a fluid bed of said catalyst and providing high pressure steam as a result of said heat exchange, said reactant restricted in gasified bubble growth to less than 24 inch hydraulic diameter during contact with said bed of fluid catalyst particles by a plurality of vertical open ended baffle tubes slotted in the wall thereof for flow of catalyst and gasiform reactant material therethrough adjacently positioned in combination with said heat exchange tubes,

said reactant conversion exotherm further constrained by maintaining from 5 to 20% by weight of coke-like material on the zeolite catalyst in the reaction zone,

maintaining a high rate of catalyst circulation from a dispersed catalyst phase above said fluid catalyst bed to a bottom portion of said bed following separation of reaction product from said catalyst passing into said dispersed phase, and recovering products of said conversion operation comprising gasoline boiling range hydrocarbons.

4,338,476

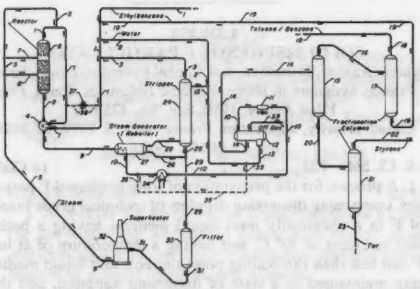
ALKYLAROMATIC HYDROCARBON DEHYDROGENATION PROCESS

Anthony G. Vickers, Arlington Heights, and Robert F. Zabransky, Oak Brook, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 810,322, Jun. 27, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,619

Int. Cl.[3] C07C *5/333*

U.S. Cl. 585—440 1 Claim



1. A process for dehydrogenating ethylbenzene to styrene which comprises the steps of:

(a) admixing a hereinafter specified vapor stream which comprises steam, ethylbenzene, styrene, and benzene into a feed stream comprising ethylbenzene;

(b) passing said feed stream after said admixture with said stream comprising steam, ethylbenzene, styrene, and benzene as a vapor into a catalytic dehydrogenation zone maintained at dehydrogenation conditions;

(c) withdrawing from said catalytic dehydrogenation zone a vaporous effluent stream comprising ethylbenzene, benzene, styrene and steam;

(d) cooling said vaporous effluent stream withdrawn from said catalytic dehydrogenation zone by indirect heat exchange against said feed stream after said admixture with said stream comprising steam, ethylbenzene, styrene, and benzene;

(e) further cooling said vaporous effluent stream and simultaneously reboiling a water stripping column by generating steam by the indirect heat exchange of said vaporous effluent

stream against water removed from the bottom of said water stripping column;

(f) further cooling said vaporous effluent stream and partially condensing said vaporous effluent stream, and passing the partially condensed vaporous effluent stream into a phase separation zone operated at conditions effective to produce a liquid hydrocarbon fraction comprising styrene, benzene, toluene and ethylbenzene and a liquid aqueous fraction containing dissolved ethylbenzene;

(g) withdrawing said liquid hydrocarbon fraction from said phase separation zone as a hydrocarbon stream, and recovering said styrene from said ethylbenzene, benzene and toluene;

(h) withdrawing said liquid aqueous fraction from said phase separation zone as a water stream;

(i) feeding at least a first portion of said water stream into an upper portion of said water stripping column of step (e) under conditions effective to form a stripping column overhead vapor stream comprising steam and ethylbenzene dissolved in said first portion of said liquid water stream, said conditions including a pressure greater than that maintained in said dehydrogenation zone but sufficiently low to allow said water stripping column to be reboiled by indirect heat exchange against said vaporous effluent stream after said effluent stream has been cooled by heat exchange against said feed stream after said admixture with said stream comprising steam, ethylbenzene, styrene, and benzene;

(j) admixing said stripper overhead vapor stream directly into said feed stream as said aforementioned vapor stream of step (a) without intermediate cooling or compression thereof; and,

(k) withdrawing a net bottoms stream comprising water which is substantially free of ethylbenzene, benzene and styrene from said water stripping column.

4,338,477

REMOVAL OF CATALYST RESIDUES FROM A GAS

Keith Moody, Watsonia, and Thomas Mole, Kew, both of Australia, assignors to ICI Australia Limited, Melbourne and Commonwealth Scientific and Industrial Research Organization, Campbell, both of, Australia

Filed Jul. 22, 1980, Ser. No. 171,035

Claims priority, application Australia, Aug. 7, 1979, PD9917

Int. Cl.³ C07C *2/02, 7/144, 7/12;* B01D *53/02*

U.S. Cl. 585—520 **22 Claims**

1. A process for the polymerization of α-olefins comprising

(a) polymerizing α-olefins or mixtures thereof in the presence of a coordination catalyst,

(b) isolating the α-olefin polymer produced,

(c) recovering a recycle gas comprising unreacted α-olefin and catalyst residues and

(d) removing said catalyst residues from said recycle gas by contacting said recycle gas with particulate mineral oxide.

4,338,478

PROCESS FOR PRODUCING CONJUGATED DIENES

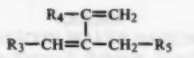
Sunao Kyo; Katsumi Omura, both of Hasaki, and Ken-ichi Hino, Funabashi, all of Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

Filed Dec. 18, 1980, Ser. No. 218,018

Int. Cl.³ C07C *1/24*

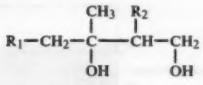
U.S. Cl. 585—606 **7 Claims**

1. A process for producing a conjugated diene represented by the general formula



wherein R_3, R_4 and R_5 each represent a hydrogen atom, or any one of them represents a methyl group and the other two each represent a hydrogen atom,

which comprises heating an alkane-1,3-diol represented by the general formula



wherein R_1 and R_2 each represent a hydrogen atom, or one of them represents a hydrogen atom and the other represents a methyl group,

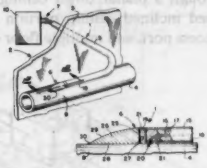
to a temperature of at least 130° C. in the liquid phase in the presence of water and a boron-oxyacid or an oxygen-containing boron compound capable of forming a boron-oxyacid in situ in a weight ratio such that the boron-oxyacid or compounds producing such compound is in a weight ratio of at least 25:75 in respect to the water, calculated on the assumption that the boron-oxyacid compound or compounds producing such compound is converted wholly to ortho-boric acid.

4,338,479

SURFACE THERMOCOUPLE ASSEMBLY AND METHOD OF MAKING SAME

Ralph H. Bauman, Genoa City, Wis., assignor to Pneumo Corporation, Boston, Mass.

Filed May 8, 1980, Ser. No. 147,834
Int. Cl.³ H01F *35/02*
U.S. Cl. 136—229 17 Claims



1. A thermocouple assembly comprising:

a sheathed thermocouple cable including an elongate tubular metallic sheath having an axial end portion, a pair of axially extending thermocouple conductors in said sheath, and electrically insulating means in said sheath supporting said conductors in electrically insulated spaced relation from each other and from said sheath, said cable having a sensing end adjacent said axial end portion, said sheath terminating at said axial end portion in an end face, a measuring junction of said conductors within said sheath located axially inwardly a short distance from said end face, said electrically insulating means substantially filling said sheath between said measuring junction and said end face, a preformed segment of solid metal extending axially outwardly from said end face, said preformed segment having a contact face extending substantially parallel to said axial end portion of said sheath and adapted for contiguous intimate contact with a surface whose temperature is to be sensed when mounted thereon.

14. A method of fabricating a thermocouple assembly using a thermocouple cable portion including an elongate tubular metallic sheath, a pair of axially extending thermocouple conductors in said sheath, and electrical insulation in said sheath to support and space apart said conductors from each other and from said sheath, comprising the steps of removing a portion of the insulation from an end of such sheath to expose the ends of the conductors, moving such exposed conductor ends to the inside surface of the sheath wall, welding such conductor ends to such inside surface a short distance axially inwardly from the end face of such sheath end, repacking the open space surrounding the measuring junction with insulation and filling such sheath with insulation up to such sheath end, and attaching a preformed segment of solid metal to the end face of the sheath, such preformed segment having a contact face extending substantially parallel to the end portion of the sheath located on the same side as such measuring junction and adapted for contiguous intimate contact with a surface whose temperature is to be sensed when mounted thereon.

4,338,480

STACKED MULTIJUNCTION PHOTOVOLTAIC CONVERTERS

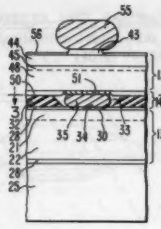
George A. Antypas, Los Altos; Ronald L. Bell, Woodside, and Ronald L. Moon, Atherton, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 29, 1980, Ser. No. 221,100
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—249 8 Claims

1. A stacked photovoltaic converter comprising:

a first solar cell having a first contact surface;

a second solar cell having a second contact surface, said solar cells being so stacked one on top of the other that said contact surfaces face each other; and



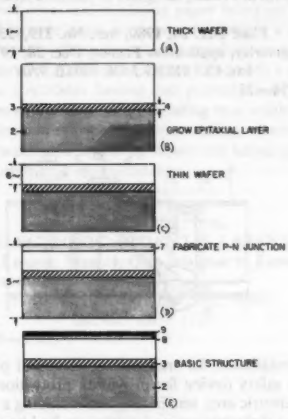
a sealing layer between said contact surfaces, said sealing layer comprising a glass layer and at least one electrically conductive inter-cell contact.

4,338,481

VERY THIN SILICON WAFER BASE SOLAR CELL

Joseph Mandelkorn, Peretz 5, Rehovot, Israel

Filed Oct. 2, 1980, Ser. No. 176,709
Int. Cl.³ H01L *31/06, 31/18*
U.S. Cl. 136—255 10 Claims



1. An improved silicon back surface field solar cell comprising a high quality very thin silicon single crystal wafer base 0.0005 to about 0.0004 inch thick, said base containing a back surface field region of the same type, P or N, as said base, said back surface field region having a thickness of about 1 μm and a dopant surface concentration of about 10^{19} atoms/cm^3, said cell having a substantially thicker epitaxial layer of silicon, doped with an impurity concentration which will provide the desired surface impurity concentration for the diffused back surface field region, interposed between the back surface field region and the cell back contact, said interposed layer having a thickness sufficient to provide required cell ruggedness.

4,338,482

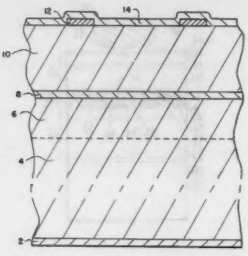
PHOTOVOLTAIC CELL

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138, assignor to Roy G. Gordon, Cambridge, Mass.

Filed Feb. 17, 1981, Ser. No. 234,646
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—256 15 Claims

1. In a photovoltaic cell structure containing a transparent, electrically conductive metal oxide layer overlying a light-

absorbing semiconductive photovoltaic layer, the improvement wherein a transparent, electrically conductive layer of



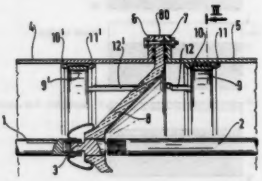
titanium dioxide is between said metal oxide layer and said photovoltaic layer.

4,338,483

ELECTRICAL POWER TRANSMITTING INSTALLATION INCLUDING A SAFETY DEVICE FOR PROVIDING PROTECTION AGAINST THE EFFECTS OF ELECTRIC ARCS

Jean-Paul Euvrard, Tassin-la-Demi-Lune, and Gilles Voisin, Lyons, both of France, assignors to Alsthom Atlantique, Paris, France

Filed Dec. 24, 1980, Ser. No. 219,653
Claims priority, application France, Dec. 28, 1979, 79 31981
Int. Cl.³ H02G *5/06*; H01B *9/04*
U.S. Cl. 174—28 **8 Claims**



1. An installation for transmitting electrical power which includes a safety device for providing protection against the effects of electric arcs, said installation including a metal casing filled with a dielectric gas under pressure, and having a coaxial central conductor, said casing and said conductor being held in position relative to each other by a transverse insulator, said safety device comprising a tubular electrical and thermal insulator and a tubular electrode being situated axially close to the transverse insulator and upstream therefrom relative to the direction of electrical power transmission, said tubular electrode being held concentric with the casing and being separated therefrom by said tubular electrical and thermal insulator, and said tubular electrode being electrically connected to said casing by conductors distributed around the electrode at a small number of points and extending from the electrode towards the transverse insulator.

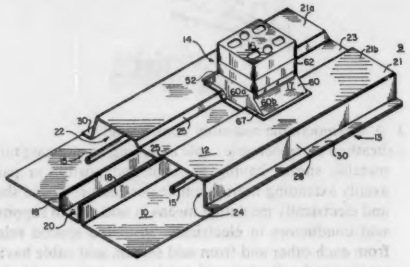
4,338,484

CABLE CARRYING FLOOR DUCT APPARATUS

Gary L. Littrell, 302 Timbercrest Ct., Schaumburg, Ill. 60193

Filed Aug. 29, 1980, Ser. No. 182,642
Int. Cl.³ H02G *3/18*
U.S. Cl. 174—48 **18 Claims**

1. An improved cable carrying floor duct apparatus comprising in combination: an elongated floor cell structure including a ceiling member, side walls and a bottom wall defining a four-sided housing enclosure, interior walls defining multiple interior compartments extending lengthwise within the cell structure, the ceiling member having multiple apertured access ports therethrough providing access to the interior compartments and being selectively spaced along the elongated length thereof, and the ceiling member further having planar offset ceiling portions extending lengthwise thereof and inclined ceiling portion which interconnect between the planar offset ceiling portions, each of the spaced-apart multiple access ports being opened through a planar offset ceiling portion and an adjacently disposed inclined ceiling portion for providing a multiple planar access port, and multiple floor outlet units to be



connected to and disposed upon the ceiling member of the floor cell structure in registered alignment with selected ones of the multiple access ports, respectively, each of the outlet units having planar offset bottom wall portions and inclined bottom wall portions interconnecting therebetween and extending complementarily with the planar offset ceiling portions and inclined ceiling portions, respectively, with the floor outlet unit being in aligned registry with the selected access port, and further having a central opening defined therethrough which aligns with the selected access port for providing access therethrough into the communicating interior compartment of the floor cell structure.

4,338,485

HEADWALL UNIT FOR PATIENT SERVICING AND METHOD FOR INSTALLATION

Eugene H. Fullenkamp; Francis J. Burst, both of Batesville; Cecil R. Lohrey, Brookville, and William D. Drew, Batesville, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Nov. 10, 1980, Ser. No. 205,186
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—48 **17 Claims**

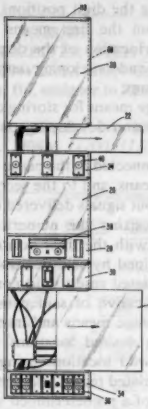
1. A headwall unit of the type adapted for connection to a wall of a patient's room to provide services to the patient, said headwall unit comprising:

a skeletal framework to which patient service components are connected, said framework having front and side portions and including pairs of vertically spaced horizontal track slots disposed along said front portion, the slots of each pair being open toward one another,

front cover panels disposed in said pairs of track slots for horizontal sliding movement therein,

said framework including a vertically elongate, releasably

attachable means at one side of said unit for preventing removal of said panels from said framework when attached



and for accommodating horizontal sliding movement of said panels from said framework when released.

4,338,486

HOUSING FOR ELECTRICAL AND ELECTRONIC COMPONENTS

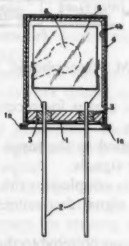
Klaus Mucke, Landshut, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,760

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824426

Int. Cl.³ H05K *5/06*

U.S. Cl. 174—52 H **1 Claim**



1. A housing package for the encapsulation of electrical components comprising:

(a) a base plate through which one or more electrical leads insulated from each other are led;

(b) a cap attached to the base plate, the cap having walls with an inside surface and an outside surface;

(c) electrical components which are encapsulated within the housing for protection against mechanical damage and ambient influences;

(d) said cap being made of steel and having a coating of NiFe which restricts the diffusion of hydrogen through the cap.

4,338,487

CONDENSER BUSHING

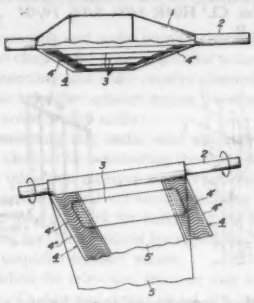
Junichi Matsuo, Chita, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Feb. 19, 1981, Ser. No. 236,063

Claims priority, application Japan, Mar. 7, 1980, 55-29441[U]

Int. Cl.³ H01B *17/28*

U.S. Cl. 174—143 **4 Claims**



1. A condenser bushing comprising an insulating paper wound around a center electrode and forming insulating layers of a condenser core, said insulating paper being provided at at least one of its side edge portions extending in a lengthwise direction thereof with an electrically conductive or semi-conductive linear electrode and being provided with a plurality of intermediate electrodes having end portions making contact with said linear electrode and extending in a widthwise direction of said insulating paper, said intermediate electrodes being inserted between said insulating layers and being spaced apart from each other by a given distance.

4,338,488

ELECTRONIC ARTIFICIAL LARYNX

Thomas M. Lennox, Mentor, Ohio, assignor to Luminaud Company, Mentor, Ohio

Filed Aug. 29, 1979, Ser. No. 70,851

Int. Cl.³ A61F *1/20*

U.S. Cl. 179—1 AL **7 Claims**

7. An apparatus for operating a tone generator of an electronic artificial larynx, comprising:

(a) a headband for secure fitting around a human head adjacent the forehead;

(b) a switch attached to the headband for operating the tone generator; and,

(c) a switch actuator extending beyond the headband, movable relative to the headband to actuate the switch, and including paddle means adherable to the forehead for

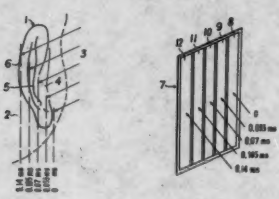
movement therewith relative to the headband for actuating said switch and said tone generator.

4,338,489

HEADPHONE CONSTRUCTION

Rudolf Görike, Vienna, Austria, assignor to AKG Akustische u. Kino-Geräte Gesellschaft m.b.H., Austria

Filed Feb. 7, 1980, Ser. No. 119,497
Claims priority, application Austria, Feb. 12, 1979, 1029/79
Int. Cl.³ H04R 3/00, 9/06, 19/04
U.S. Cl. 179—1 R 14 Claims



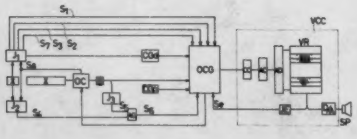
14. A method of reproducing sound having a discernable front directional and distance quality, with respect to the user, with an audio signal comprising, positioning a diaphragm supported by a housing in a plane in close proximity to the external ear of a user, the diaphragm being divided into a plurality of adjacent coherent sections disposed in succession substantially along a path across the user's external ear from front to back, activating a first diaphragm section of the diaphragm along the path in alignment with the direction quality, activating a second immediately adjacent and successive diaphragm section along the path with the same audio signal which has been delayed by a selected time period, the total delay over all sections selected to be less than 0.3 ms, the housing being selected to be substantially sound permeable and there being substantially no reflecting surfaces when viewed from the user's ear behind the diaphragm, the audio signal propagating with delay unidirectionally from diaphragm section to diaphragm section along the path.

4,338,490

SPEECH SYNTHESIS METHOD AND DEVICE

Sigeaki Masuzawa; Hiroshi Miyazaki, both of Nara, and Shinya Shibata, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 26, 1980, Ser. No. 134,318
Claims priority, application Japan, Mar. 30, 1979, 54-39050; Mar. 30, 1979, 54-39054
Int. Cl.³ G10L 1/00
U.S. Cl. 179—1 SM 3 Claims



1. A synthetic speech device capable of developing audible sounds indicative of numerical data and capable of inserting pause intervals at desired locations within said audible sounds, comprising:

first means for storing said numerical data therein and for storing information indicative of the location of the decimal point within said numerical data;

second means for storing said numerical data therein and developing output signals indicative thereof;

third means interconnected between the first and second means for transferring said numerical data from the first means to the second means;

decision means connected to the first means and third means for determining the digit positions of the numerical data transferred from the first means to the second means relative to the location of the decimal point within said numerical data and developing output signals indicative of the digit positions;

pause code storage means for storing codes indicative of said pause intervals and developing output signals indicative thereof;

control means connected to the pause code storage means, to the decision means, and to the second means and responsive to the output signals delivered therefrom for correlating and synthesizing the numerical data stored in the second means with the digit positions of said numerical data as determined by said decision means, thereby producing a correlated result, said control means retrieving said codes indicative of said pause intervals from said pause code storage means and inserting said pause intervals at certain desired locations within the correlated result, the desired locations being dependent upon the particular correlated result, said control means developing output signals of a predetermined sequential order representative of the correlated result inclusive of the inserted pause intervals; and

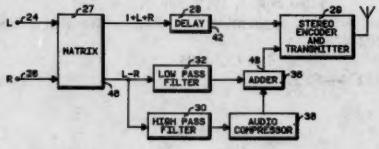
means responsive to the output signals from said control means for developing audible sounds in said predetermined sequential order, said audible sounds representing said numerical data, the digit positions of said numerical data, and the pause intervals inserted at said desired locations therein.

4,338,491

COMPATIBLE AM STEREOPHONIC SYSTEM

Norman W. Parker, Wheaton, and Francis H. Hilbert, Addison, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 4, 1980, Ser. No. 156,249
Int. Cl.³ H04H 5/00
U.S. Cl. 179—1 GS 9 Claims



1. A compatible AM stereophonic broadcasting system comprising:

first and second input means for receiving first and second information signals;

matrixing means coupled to the input means for providing sum and difference signals;

first audio filter means coupled to the matrixing means for passing difference signal frequencies above a predetermined frequency;

second audio filter means coupled to the matrixing means for passing difference signal frequencies below the predetermined frequency;

audio processor means coupled to the first filter means for reducing the amplitude of high level, high frequency signals in the first filter output;

combining means coupled to the second filter means and the audio processor means for combining the respective output signals;

delay means coupled to the matrix means for delaying the sum signal by a period substantially equal to the delay period of one of the filter means; and

encoding and signal generating means coupled to the delay

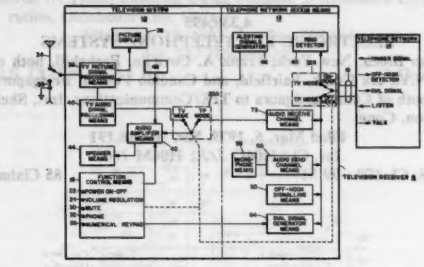
means and combining means for generating a composite stereophonic signal.

4,338,492

TELEVISION RECEIVER WITH TWO-WAY TELEPHONE CONVERSATION CAPABILITY

Paul A. Snopko, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 2, 1980, Ser. No. 109,424
Int. Cl.³ H04M *11/00, 11/08*
U.S. Cl. 179—2 TV 2 Claims



1. A television receiver comprising a cabinet which houses a television system having telephone network access means, said receiver providing both for presentation of television programs and for conversing through the talk channel and listen channel of an embodied telephone network while viewing a television picture, said television system having function control means including operational mode selection means for providing a television program mode, and alternately, a two-way-telephone-conversation-with-television-picture mode,

A. said television system of said television receiver comprising:

(1) means for receiving broadcast or cable-carried television program signals;

(2) means for processing said signals effective to provide separate video and audio signals;

(3) cathode ray tube picture display means for receiving said video signal for displaying a television picture; and

(4) television audio signal processing means for receiving said audio-signal including dual-function audio amplifier-speaker means connectible to said telephone network during to said two-way-conversation-with-television-picture mode;

B. said telephone network access means of said television receiver comprising:

(1) ring detector means for detecting a ringer signal from said telephone network during said television program mode;

(2) alerting signal generating means for receiving said detected ringer signal and generating an audible and/or visible alerting signal;

(3) off-hook signaling means for providing an off-hook signal to the telephone network;

(4) microphone means for sensing user voice signals during a telephone conversation;

(5) audio send channel means for receiving and amplifying the output of said microphone means for routing to said talk channel of the telephone network; and

(6) audio receive channel means for accepting the listen signal from said telephone network for routing to audio amplifier-speaker means in said television system;

C. said function control means of said television receiver comprising:

(1) first means for routing, when said receiver is in said television program mode, and when said receiver is in an ON-hook condition, said ringer signal from said telephone network to said ring detector and to said alerting signals generator, and for connecting said TV audio signal processing means to said audio amplifier-speaker means for reproducing the audio portion of the television program signal;

(2) second means for disconnecting the aforesaid connections for muting said television program when said function control means is operated to place the receiver in said two-way-telephone conversation-with-television-picture mode, and when said telephone network is in an off-hook condition, said second means also providing for

(a) connecting said audio receive channel means to said listen channel for accepting caller voice audio signals;

(b) connecting said audio receive channel means to said audio amplifier-speaker means for rendering audible the voice of said caller;

(c) connecting said audio send channel means to said talk channel for conducting the voice audio signals of said television receiver user to said caller; and,

(d) connecting said off-hook signalling means to the telephone network for indicating the line is in use;

(3) volume regulating means for regulating volume of said audio amplifier-speaker means;

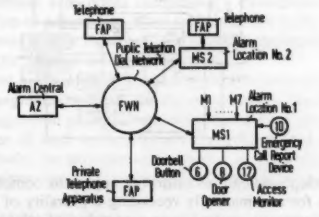
such that when the television receiver user is alerted to the presence of a detected ringer signal, the user can activate the two-way-telephone-conversation-with-television-picture mode and conduct a two-way conversation with said telephone caller through the television receiver while viewing a broadcast or cable-carried television picture, and upon termination of the conversation, restore said television program mode.

4,338,493

METHOD AND DEVICES FOR REPORTING EMERGENCY CALLS AND FOR INITIATING EMERGENCY ASSISTANCE MEASURES

Derk Stenhuis, Rijswijk, and Wouter J. Nieuwenhuizen, Zoetermeer, both of Netherlands, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,900
Claims priority, application Netherlands, Jun. 27, 1979, 7905018
Int. Cl.³ H04M *11/04*
U.S. Cl. 179—5 R 19 Claims



1. In an emergency assistance system,

an alarm central for monitoring for incoming emergency call reports (NRM) and operable to transmit coded signals including a coded communication control signal, a coded preliminary signal (TKF) and a coded door access signal (T0), and operable to send and receive voice communications,

an alarm location for installation in a closed dwelling unit and having communication means providing for the reception of said coded signals from said alarm central and for two-way voice communication with said alarm central,

an emergency call report device at said alarm location for initiating the transmission of an emergency call report to said alarm central via said communications means, when a

person at the dwelling unit actuates said device to signal a need for emergency assistance,

said communication means at said alarm location being responsive to the coded communication control signal from said alarm central for automatically establishing two-way voice communication between said alarm central and said alarm location via said communications means, whereby said alarm central can respond to an emergency call report by establishing voice communication with the person in need of emergency assistance, and

doorbell response means for connection with a doorbell of the closed dwelling unit, and responsive to said coded preliminary signal (TKF) from said alarm central, and operable after receipt of said coded preliminary signal (TKF) to notify said alarm central when the doorbell is thereafter actuated, so that alarm central is notified when a person summoned to render assistance has actuated the doorbell, and

door access control means at said alarm location and automatically responsive to said coded door access signal from said alarm central for enabling access to the dwelling unit, whereby said alarm central has selective control of access to the dwelling unit and can authorize access after notification via the doorbell response means.

4,338,494

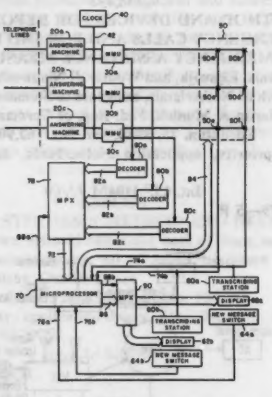
TELEPHONE CALL INVENTORYING AND SEQUENCING SYSTEM AND METHOD

Peter F. Theis, 3203 Bay View La., McHenry, Ill. 60050

Filed Jul. 11, 1980, Ser. No. 167,798

Int. Cl.³ H04M *1/64, 11/10*

U.S. Cl. 179—6.09 **24 Claims**



1. A telephone call inventorying apparatus comprising:

means for automatically recording a plurality of telephone messages transmitted over a plurality of telephone lines, said recording means including a plurality of recording units, each recording unit comprising a respective recording medium and adapted to be coupled to one of the telephone lines during the period of a call to record on the respective recording medium messages transmitted over the coupled telephone line;

means for recording a respective sequence signal for each of the messages, each sequence signal being recorded on the respective recording medium in physical association with the respective message, said sequence signals indicative of the sequence in which the plurality of messages were recorded by the plurality of recording units;

means for transmitting messages recorded by said recording means, said transcribing means including manually controlled means for generating a control signal;

means, responsive to the recorded sequence signals, for automatically determining a selected one of said plurality of recording units, which selected recording unit contains a recorded message which has not yet been transcribed and which is associated with a recorded sequence signal indicative of an earlier message than the untranscribed messages recorded in a second one of said plurality of recording units; and

means, responsive to the control signal, for interconnecting said transcribing means with the selected one of said plurality of recording units to enable said transcribing means to transcribe from said selected recording unit.

4,338,495

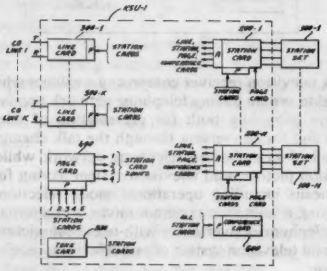
ELECTRONIC KEY TELEPHONE SYSTEMS

Alan Bloch, New York; Frank A. Coviello, Peekskill, both of N.Y.; Ira Guzik, Fairfield, and Candido Puebla, Bridgeport, both of Conn., assignors to TIE/Communications, Inc., Shelton, Conn.

Filed Mar. 6, 1979, Ser. No. 18,191

Int. Cl.³ H04Q *5/20;* **H04M** *1/00*

U.S. Cl. 179—99 M **85 Claims**



1. An electronic key telephone system, comprising:

(1) a plurality of station set means, each including a plurality of switches and each operative to generate a continuous time-division-multiplexed digital data stream to indicate periodically the status of each of said plurality of switches, and further operative, in response to actuation of any one of said plurality of switches, to generate a service request signal as part of said continuous time-division-multiplexed digital data stream; and

(2) a key service unit, comprising at least:

(a) a plurality of station circuit means, each operative to receive said continuous time-division-multiplexed digital data stream from one of said station set means, and to generate a continuous time-division-multiplexed digital data stream which is received by said station set means, to indicate periodically which internal connections are to be made in said station set means, each of said plurality of station circuit means including a plurality of active port means, each of which is connected to and operative to receive a status signal from a passive port means, and (i) when a service request signal is received from said station set means and (ii) if said status signal from said passive port means indicates that the service specified by said service request signal can be provided, said active port means is further operative to close a path to said passive port means and to generate a service signal to said passive port means;

(b) a plurality of line circuit means, each including a passive port means operative to generate a status signal indicating the status of the line circuit means, and further operative to receive a service signal from at least one of said plurality of station circuit means and, in response thereto, to cause the line circuit means to effect the requested service and to alter said status

signal to indicate the changed status of the line circuit means; and

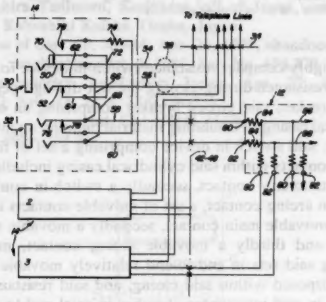
(c) audible and visual signal generator means operative to provide a plurality of audible signals and visual indicator energizing signals to said electronic key telephone system.

4,338,496

TESTING FACILITY FOR TELEPHONE CONFERENCE BRIDGE

Alfred W. Yakel, Edmond, Okla., assignor to Keltronics Corporation, Oklahoma City, Okla.

Filed May 19, 1981, Ser. No. 265,144
Int. Cl.³ H04M *5/00*
U.S. Cl. 179—175.1 R **13 Claims**



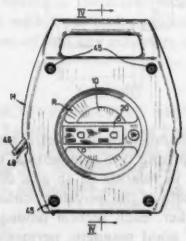
1. In combination with a passive bridge circuit having impedance legs through which conference call connections are established between associated network lines of a telephone communication system, apparatus for connecting said bridge circuit to the network lines while facilitating testing thereof by test equipment, comprising a housing internally mounting the bridge circuit, and a plurality of plug-in jack devices mounted in the housing for interconnecting the bridge circuit and the network lines, each of said jack devices including insertion activated means for alternatively connecting the test equipment to one of the legs of the bridge circuit in parallel with the network lines associated therewith and disconnecting said one of the legs from the associated network lines.

4,338,497

EXTENSION CORD REEL SET

Douglas Drew, Toronto, Canada, assignor to Noma Canada Ltd., Scarborough, Canada

Filed May 7, 1980, Ser. No. 147,359
Int. Cl.³ H02G *11/02*
U.S. Cl. 191—12.4 **5 Claims**



1. A reel-type extension cord set, comprising:

a flexible extension cord having an electrical outlet molded onto one end thereof with all of its live elements embedded in the molding material;

a reel having a wide and deep peripheral groove within which said extension cord is coilable;

a housing for said reel within which it is rotatable for uncoiling and recoiling said extension cord and having an opening through which said extension cord is withdrawable for use;

a hub forming part of said reel having a compartment within which said outlet is captured and substantially contained against movement; the housing having a window affording use access to said outlet within said compartment;

said reel comprising two components with formations cooperating to provide said compartment and contain the outlet therein, and

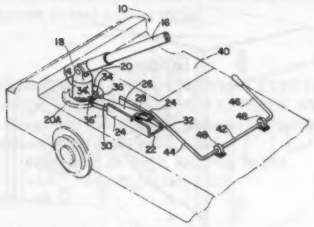
one formation in one of said components comprising a channel within which the outlet is seatable; the other component having a floor disposed over said channel and barring it to prevent withdrawal of said outlet therefrom.

4,338,498

TROLLEY POLE LATCH FOR ELECTRIC MULES

Monroe Murphy, P.O. Box 624, New Richmond, W. Va. 24867

Filed Oct. 30, 1980, Ser. No. 202,084
Int. Cl.³ B60L *5/12*
U.S. Cl. 191—66 **5 Claims**



1. In an electric mule trolley system:

(A) a trolley pole mounted for movement about horizontal and vertical axes to the remote side of the mule,

(B) the vertical axis mount comprising a cylindrical bearing carried on or adjacent to a top surface of the mule,

(C) a segmental plate rigidly affixed to said cylindrical bearing in acentric relation to its vertical axis,

(D) a detent horizontally pivoted to a fixed fulcrum proximate to said segmental plate in overlapping relation therewith,

(E) said segmental plate having relieved portions upon opposite sides of said vertical axis that conform, and engage, respectively, the proximal end and one included side of said detent when disposed in either of two preselected positions, and

(F) a lever bar mechanism for actuating said detent extending across said mule from its remote side to the opposite or near side thereof.

4,338,499

ANTI-PARALLELING APPARATUS FOR HIGH-VOLTAGE GEAR

Leonard V. Chabala, Maywood, and Walter J. Hall, Evanston, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Oct. 29, 1980, Ser. No. 201,684
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—50 C **11 Claims**

1. In high-voltage switchgear of the type having first and second switches which are each movable between a full open state and a full closed state by respective first and second operating mechanisms, improved apparatus for preventing one switch from residing in a selected one of its states at the same

time the other switch resides in a selected one of its states, which apparatus comprises:

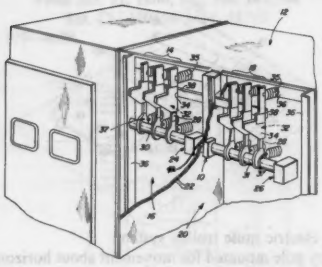
(a) first means for mimicking the state of the first switch, the first mimicking means having a normal first position when the first switch is in the other state, and being movable first to an intermediate position as movement of the first switch to the one state is initiated by its operating mechanism while the first switch remains in the other state and then to a second position when the first switch is in the one state;

(b) second means for mimicking the state of the second switch, the second mimicking means having a normal first position when the second switch is in the other state, and being movable first to an intermediate position as movement of the second switch to the one state is initiated by its operating mechanism while the second switch remains in the other state and then to a second position when the second switch is in the one state;

(c) interconnection means for preventing operation of either switch, the respective mimicking means of which is prevented from moving; and

(d) sequencing means for

(i) permitting movement of each mimicking means between its first and intermediate positions regardless of the position of the other mimicking means,



(ii) preventing movement of one mimicking means from its intermediate position to its second position whenever the other mimicking means is in its second position or is between its intermediate and second positions,

(iii) permitting movement of each mimicking means from its first position through its intermediate position to its second position whenever the other mimicking means is in its first position,

(iv) preventing movement of one mimicking means from its intermediate position to its second position whenever the other mimicking means is in its first position but the one mimicking means previously moved from its first position to its intermediate position and did not return to its first position while the other mimicking means was in its second position or was between its intermediate and second positions,

(v) preventing simultaneous movement of the mimicking means out of their intermediate and toward their second positions, and

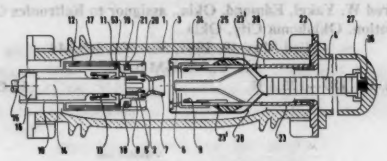
(vi) permitting movement of each mimicking means from its second position through its intermediate position and to its first position.

4,338,500

DEVICE FOR SWITCHING IN A RESISTANCE WHEN A CIRCUIT BREAKER CLOSES A CIRCUIT

Doan Pham Van, and Dante Nicoloso, both of Meyzieu, France, assignors to Societe Anonyme dite: Delle-Alsthom, Villeurbanne, France

Filed Feb. 28, 1980, Ser. No. 125,601
Claims priority, application France, Mar. 2, 1979, 79 05478
Int. Cl.³ H01H *33/16, 9/42*
U.S. Cl. 200—144 AP **11 Claims**



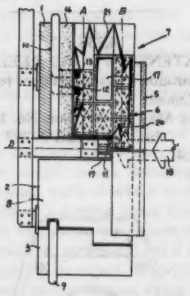
1. A highly compact resistance switch-in device for switching in a resistance during closing but not during opening of a circuit breaker, said circuit breaker comprising an elongated cylindrical casing of insulating material defining an interrupter chamber, said switch-in device comprising a set of fixed concentric contacts within said cylindrical casing including firstly a main stationary contact, secondly a switch-in contact, and thirdly an arcing contact, a set of movable contacts including firstly a movable main contact, secondly a movable switch-in contact, and thirdly a movable arcing contact, means for mounting said sets in end-to-end relatively movable position axially disposed within said casing, and said resistance being disposed in said interrupter chamber in axial end-to-end connection to one of said fixed contacts remote from said movable set of contacts.

4,338,501

EXTINGUISHING CHAMBER FOR AN ELECTRIC ARC OF THE MAGNETIC BLOW-OUT TYPE

Ernesto Maggi, Viale V. Emanuele 69, 24100 Bergamo, Italy

Filed Mar. 20, 1979, Ser. No. 22,351
Claims priority, application Italy, Mar. 30, 1978, 21771 A/78
Int. Cl.³ H01N *33/18*
U.S. Cl. 200—147 A **9 Claims**



1. Extinguishing chamber for the electric arc of the magnetic blow-out type, comprising two symmetrical sections disposed in specular position in relation to an axis corresponding approximately to the path of the movable contact of the electric current circuit breaker, each section having a first yoke of metallic material of good magnetic permeability, permanent magnets coupled in pairs to said yoke to generate a constant magnetic field, said yoke adapted to conduct the magnetic return flux generated by the pairs of permanent magnets exter-

nally to said section, electrically insulating refractory walls positioned within each section defining a slit through which the arc passes, a second yoke within each section, electrically insulated windings wound around said second yoke and having connection horns at the end thereof properly shaped and arranged inside said slit to generate a supplementary variable magnetic field having the same direction as the constant field, said windings being run through by unidirectional currents proportional to the current to be interrupted and derived from the electric interruption arc itself when this latter, during its movement inside the slit of the section it occupies, produced by the constant magnetic field, skims over said properly shaped connection horns arranged inside said slit.

4,338,502

METALLIC HOUSING FOR AN ELECTRONIC APPARATUS WITH A FLAT KEYBOARD

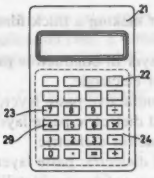
Shintaro Hashimoto, Shiki; Shigeki Komaki, Yamatokoriyama, and Akira Tanimoto, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 33,414, Apr. 26, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,379

Claims priority, application Japan, Apr. 27, 1978, 53-57240[U]; Apr. 28, 1978, 53-60096[U]

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—159 B **2 Claims**



1. A hand-held electronic calculator having a keyboard comprising:

a housing having an upper member and a lower member for said hand-held electronic calculator, said upper member being made of metallic material;

said upper metallic housing member of said housing constituting a plurality of key actuators, each of said key actuators being defined by a continuous slot which connects with itself and completely penetrates the upper metallic housing member;

a flexible sheet fixed to the rear surface of the upper metallic housing member in a manner to cover all of the key actuators, said flexible sheet carrying an electrically non-conductive silicon rubber sheet and a plurality of electrically conductive silicon rubber contacts forming the movable contacts for the keyboard; and

a plurality of stationary contacts including means for their support, disposed within said housing, said stationary contacts being positioned to correspond to said movable contacts, whereby a particular movable contact comes into contact with a particular stationary contact when a particular one of said key actuators is depressed.

4,338,503

INDUCTIVE HEATING APPARATUS

Susumu Ito, and Toshio Ogino, both of Fujishi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 30, 1980, Ser. No. 173,745

Claims priority, application Japan, Aug. 3, 1979, 54-99259

Int. Cl.³ H05B *5/04*

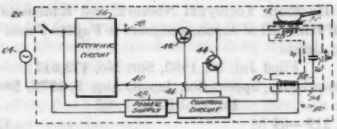
U.S. Cl. 219—10.77 **9 Claims**

1. An inductive heating apparatus comprising:

a serially connected switching circuit including a first switching element and a second switching element which alternately conduct in a given order;

a resonant circuit including an inductive heating coil and a capacitor, parallelly connected to said second switching element;

sensing means for sensing a first current flowing in said first switching element and a second current flowing in said second switching element and for producing first and second signals in response to said first and second currents reaching first and second predetermined magnitude levels respectively prior to becoming zero, and producing third



and fourth signals in response to said first and second currents reaching said zero magnitude level respectively;

control means, responsive to said sensing means and connected to said first and second switching elements, for causing: (1) said first switching element to become conductive in response to said fourth signal, (2) said first switching element to become non-conductive in response to said first signal, (3) said second switching element to become conductive in response to said third signal, and (4) said second switching element to become non-conductive in response to said second signal.

4,338,504

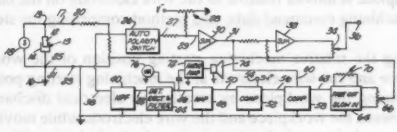
ARC PREVENTION AND DETECTION ELECTRICAL DISCHARGE MACHINE SERVO CONTROL SYSTEM

Samuel A. Gray, Sun Valley, Calif., assignor to Pacific Controls Incorporated, North Hollywood, Calif.

Filed Aug. 28, 1979, Ser. No. 70,298

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 M **1 Claim**



1. A method of preventing undesirable conditions in electric discharge energy across a gap between an electric discharge machining electrode and a workpiece, comprising the steps of:

detecting the voltage across the gap and generating a first voltage signal representative of said voltage;

generating a second voltage signal representative of a preselected desired voltage across the gap;

comparing said first voltage signal to said second voltage signal and generating a servo control signal responsive to the difference between said first and second voltage signals, said servo control signal being applied to a servo control mechanism for withdrawing the electrode when said difference is of one polarity;

sensing radio frequency energy within a preselected range of frequencies across the gap and generating a withdrawal signal in response to said radio frequency energy being below a preselected level, and adding said withdrawal signal to said servo control signal, said withdrawal signal being of said one polarity and of sufficient magnitude to cause said mechanism to rapidly withdraw the electrode, even though said servo control signal of said opposite polarity is present, the rate of speed of withdrawal respon-

sive to said withdrawal signal being greater than the rate of speed of withdrawal of the electrode when the radio frequency energy is above said preselected level, and

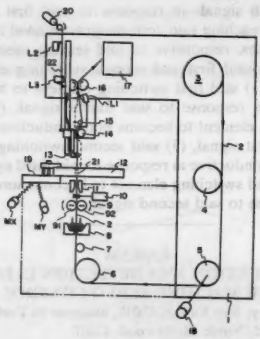
in the absence of said withdrawal signal immediately reinserting the electrode, at a rate slower than the electrode was withdrawn, in order to reestablish a desired gap distance.

4,338,505

METHOD AND APPARATUS FOR RESTORING A WIRE ELECTRODE

Hideo Katsube, Hachioji; Gotaro Gamo, Komae; Mitsuo Kinoshita, Hachioji; Yoshiyuki Nomura, and Kanemasa Okuda, both of Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,612
Claims priority, application Japan, Aug. 3, 1979, 54-099347
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 M **12 Claims**



1. A method of restoring a broken wire electrode in a wire electrode-type electric discharge machine for machining a workpiece into a desired shape by a wire electrode while the workpiece is moved relative to the wire electrode on the basis of machining command data, said method comprising the steps of:

storing the relative machining starting position of the workpiece and the wire electrode at the machining starting point;

machining the workpiece by creating an electrical discharge between the workpiece and the wire electrode while moving the workpiece relative to the wire electrode in accordance with the machining command data;

monitoring the relative current position of the workpiece and the wire electrode;

generating a wire breakage signal when the breakage of the wire electrode is detected;

stopping the machining when the wire electrode breaks;

storing the relative current position as a relative wire electrode breakage position of the workpiece and the wire electrode when the wire breakage signal is generated;

bringing the relative position of the workpiece and the wire electrode into coincidence with said machining starting position by moving the workpiece relative to the wire electrode on the basis of information indicative of said machining starting position and said electrode wire breakage position after the wire electrode has broken;

restoring the wire electrode, at the machining starting position, to the path along which the wire electrode travels;

moving the workpiece again relative to the wire electrode from the machining starting point to the wire electrode breakage position on the basis of the machining command data;

stopping the movement of the workpiece relative to the wire electrode when the current position coincides with the wire electrode breakage position; and

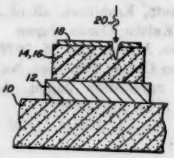
starting electric discharge machining again after the relative position of the workpiece and the wire electrode has been brought into coincidence with said wire electrode breakage position.

4,338,506

METHOD OF TRIMMING THICK FILM CAPACITOR

Gary R. Geller, Plantation; Anthony B. Suppelsa, Coral Springs, and William J. Martin, Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 7, 1979, Ser. No. 73,404
Int. Cl.³ H01G *7/00*
U.S. Cl. 219—121 LJ **5 Claims**



1. The process for making a thick film capacitor including the steps of:

screening a first layer of conductive paste on a substrate to form a capacitor electrode,

drying the first conductive paste layer,

screening a second dielectric paste layer over the first layer to form the capacitor dielectric,

drying the second dielectric paste layer,

screening a third layer of organo-metallic paste having molecules containing conductive particles over the second layer to form a second capacitor electrode,

drying the third organo-metallic paste layer,

firing the first, second and third layers, and continuing such firing until the third layer is reduced to a layer of conductive particles having a maximum thickness of 2 microns, and

trimming the third layer to adjust the size of the electrode formed thereby and the value of the capacitor.

4,338,507

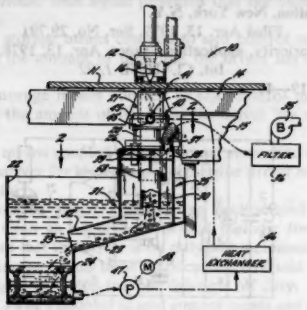
WATER-QUENCHED COLLECTION SYSTEM FOR USE WITH A PLASMA-ARC TORCH

William B. Scott, Rochelle, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed Jan. 28, 1980, Ser. No. 116,319
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 PC **13 Claims**

1. Apparatus for cutting a metal workpiece, said apparatus comprising a metal melting tool located above the workpiece and operable to emit downwardly directed energy for melting the workpiece, and an upright tubular duct located below the workpiece and aligned vertically with said tool whereby molten metal is directed downwardly into said duct, the improvement in said apparatus comprising, a tank of liquid located below the workpiece, the lower end of said duct being located in proximity to the liquid in said tank, a jacket surrounding the upper portion of said duct and providing a space for liquid in cooling relationship with the outside of said duct, means for pumping liquid from said tank and into said space provided by said jacket, and an annular outlet at the upper ends of said duct and said jacket and opening downwardly into the inside of said

duct whereby the liquid pumped into said jacket is discharged out of said outlet and streams downwardly along the inside of



the duct to cool the duct and to flush molten metal from the duct and into the tank.

4,338,508

INSCRIBING APPARATUS AND METHODS

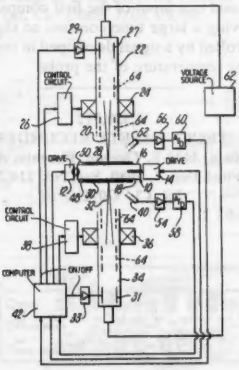
Geraint A. C. Jones, 54, Kelsey Crescent, Cherry Hinton, Cambridge, and Haroon Ahmed, 9, Owlstone Rd., Cambridge, both of England

Continuation-in-part of Ser. No. 80,034, Sep. 28, 1979, abandoned. This application Dec. 2, 1980, Ser. No. 212,246

Claims priority, application United Kingdom, Oct. 2, 1978, 38953/78

Int. Cl.³ G21K *5/10*; B23K *26/02*

U.S. Cl. 219—121 EJ **17 Claims**



1. Apparatus for scribing a workpiece surface comprising:

a worktable-for supporting a workpiece means, which has opposed parallel workpiece faces exposed to opposite directions;

means for generating a first beam;

means for directing the first beam towards the worktable for the controlled inscribing of a first of said workpiece faces;

means for generating a second beam;

means for directing the second beam on an axis effectively co-axial with the axis of the first beam but in the opposite direction towards the opposed worktable face;

position indicating means carried on the worktable;

means for deriving electrical position signals from impingement of the two beams with the indicator means;

comparator means for determining any offset between the axes of the two beams;

memory means for storing information relating to said offset;

means for moving a workpiece into position so that the two beams impinge on opposite faces thereof, and so that the second beam can detect position control marks on the opposed face of the workpiece; and

means for controlling the relative positions of the first beam and the first of the workpiece faces to produce inscribing of said first face positionally controlled dependent on the position control marks on the opposed face and dependent on the stored information relating to the offset.

15. A method of scribing a workpiece surface comprising the steps of:

supporting a workpiece means on a worktable with two parallel workpiece faces exposed to opposite directions;

generating a first beam;

directing the first beam towards the first of said workpiece faces to allow for controlled inscribing thereof;

generating a second beam;

directing the second beam on an axis effectively coaxial with that of the first beam but in the opposite direction onto the opposed workpiece face;

providing position control marks on the worktable;

deriving electrical position signals from impingement of the two beams with the indicator means;

determining any offset between the axes of the two beams by comparing the electrical position signals relating to the two beams;

storing information relating to any said offset in memory means;

moving a workpiece into position so that the two beams impinge on opposite faces thereof and detecting position control marks on the opposed face of the workpiece by the second beam; and

controlling the relative positions of the first beam and the first of the workpiece faces to produce positionally controlled inscribing of said first face dependent on the position control marks on the opposed face and dependent on the stored information relating to any offset in the axes of the beams.

4,338,509

PROCESS OF AND APPARATUS FOR PRODUCING A HOMOGENEOUS RADIALLY CONFINED PLASMA STREAM

Miloslav Bartuska; Karel Zverina; Josef Szabo; Borivoj Pospisil, and Petr Kroupa, all of Praque, Czechoslovakia, assignors to Vysoka skola chemicko-technologicka, Praque, Czechoslovakia

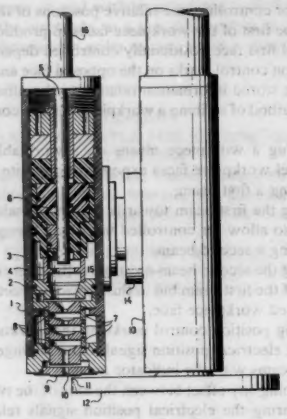
Continuation-in-part of Ser. No. 144,169, Apr. 25, 1980, abandoned. This application Nov. 14, 1980, Ser. No. 206,979

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PR **8 Claims**

1. A process of radial stabilization and homogenization of a plasma stream with a concentration of charged particles between 2.00×10^{24} and 0.3×10^{23} per cubic centimeter in number and with a temperature between 15,000° K and 60,000° K, wherein the arc is created between the front surface of a rod cathode arranged in an arc chamber of a plasma burner and an anode arranged outside the arc chamber, the arc passes through at least two orifice plates, the arc is stabilized by a cooling eddy of liquid led in a tangential direction into at least one of the spaces between the orifice plates or the orifice plates

and the nozzle, the arc passes through the nozzle hole, and after leaving the nozzle hole the arc is bent in one direction



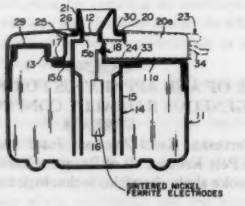
toward the perimetric anode surface lying out of the main outlet plasma stream emitted from the nozzle.

4,338,510

ELECTRODE TYPE STEAM VAPORIZER HAVING CORROSION RESISTANT NICKEL FERRITE ELECTRODES AND A PROTECTIVE COVER

Masao Chihara; Shigeo Araki, and Kazuhiko Asakawa, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1978, Ser. No. 878,787
Claims priority, application Japan, May 11, 1977, 52-58841[U]
Int. Cl.³ H05B *3/60;* F22B *1/30*
U.S. Cl. 219—288 **10 Claims**



1. An electrode type steam vaporizer, comprising:

a container for water having an upper surface with a steam outlet; and

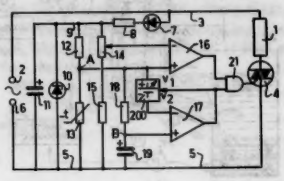
a plurality of spaced apart ferrite electrodes extending into the container and having electrode terminals extending through said upper surface of said container for connection to an AC voltage source to heat water therein and produce steam when AC voltage is applied to the electrodes, said electrodes each including a sintered body prepared by sintering a shaped body of a mixture of 60 mole percent Fe_2O_3 with 40 mole percent divalent nickel oxide.

4,338,511

ELECTRONIC THERMOSTAT EQUIPPED WITH AN ENERGY-SAVING DEVICE

Jean-Claude G. Six, Versailles, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,791
Claims priority, application France, Apr. 13, 1978, 78 10915
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 **16 Claims**



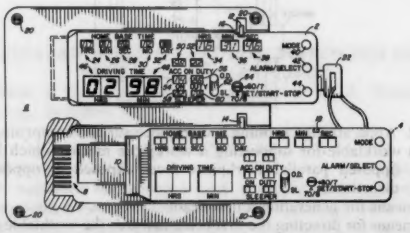
1. An electronic thermostat equipped with an energy saving device comprising, a temperature probe, a static circuit breaker having a control electrode for controlling its operation, a first voltage comparator circuit having one input coupled to the temperature probe, a second input coupled to a source of reference voltage and an output, a pair of input terminals for connection to a source of electric power, a load, means connecting the circuit breaker in series with the load across said input terminals, switching means, a second voltage comparator circuit having a first input coupled to said one input of the first comparator circuit via a threshold voltage source and an output connected to the switching means, means coupling the output of the first comparator circuit to the control electrode of the static circuit breaker via said switching means, and means coupling a second input of the second voltage comparator circuit to said one input of the first comparator circuit via a network having a large time constant so that the switching means is controlled by a signal developed in response to a rapid decrease in the temperature of the probe.

4,338,512

TRUCK SAFETY RECORDER

Walter F. Ludwig, 3434 E. Oregon, Phoenix, Ariz. 85018

Filed Dec. 8, 1980, Ser. No. 214,346
Int. Cl.³ G07C *5/04*
U.S. Cl. 235—92 T **16 Claims**



1. A recording apparatus for use by a driver of a vehicle, the vehicle powered by an engine, said recording apparatus comprising in combination:

a. clocking means for generating a periodic time signal;

b. a sensor for sensing that the vehicle is in motion and generating a motion signal in response thereto;

c. first storage means for storing the amount of time that the driver has spent driving the vehicle;

d. display means coupled to said first storage means for displaying the time stored by said first storage means;

e. control means responsive to the periodic time signal and responsive to the motion signal for incrementing the time stored by said first storage means upon an occurrence of said periodic time signal provided that the vehicle is in motion;

f. second storage means coupled to said control means for storing the amount of time that the driver has spent on duty;

g. third storage means coupled to said control means for storing the amount of time that the driver has spent off duty;

h. switch means coupled to said control means and operated by the driver for indicating whether the driver is on duty or off duty;

i. said control means incrementing said second storage means upon an occurrence of said periodic time signal provided that the driver is on duty and incrementing said third storage means upon an occurrence of said periodic time signal provided that the driver is off duty;

j. a keyed switch coupled to said control means and operated by an insertable key;

k. engine enable/disable means coupled to the engine of the vehicle and having an input for disabling the engine upon receiving a shut-down signal at the input; and

l. said control means being coupled to the input of said engine enable/disable means for supplying the shutdown signal provided that said key is inserted within said keyed switch when said switch means indicates that the driver is off duty.

4,338,513

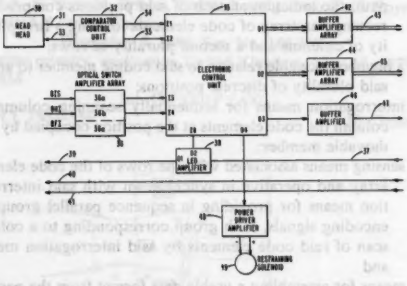
BISTABLE MAGNETIC WIRE BADGE READER

Richard G. Harris, Franklin; Robert J. Dalessio, and Neil W. Harman, both of Marlboro, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 5, 1980, Ser. No. 175,461

Int. Cl.³ G06K *7/08, 19/06*

U.S. Cl. 235—449 **4 Claims**



1. A bistable magnetic wire badge reading system for detecting coded patterns of bistable magnetic wires embedded in a user badge and forwarding information read from said badge to a local controller, which comprises:

(a) sensor means for detecting the presence of said badge at spaced apart stations along an insertion path into said reading system and issuing logic signals to signal the occurrence of initial, intermediate and full badge insertions;

(b) bistable magnetic wire detection means positioned in registration with said insertion path for generating logic pulse trains representative of said coded patterns;

(c) logic control means responsive to said logic signals, and receiving said logic pulse trains for validating said user badge and formatting said logic pulse trains into an information stream for validation by said local controller; and

(d) badge restraining means responsive to a valid badge signal received from said logic control means for gripping said badge upon the detection of a full badge insertion by said sensor means, and thereafter releasing said badge in the event said local controller signals to said logic control means the detection of valid data in said information stream.

4,338,514

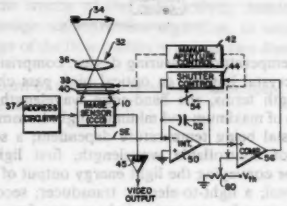
APPARATUS FOR CONTROLLING EXPOSURE OF A SOLID STATE IMAGE SENSOR ARRAY

James A. Bixby, San Diego, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Apr. 7, 1980, Ser. No. 138,024

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **8 Claims**



1. Apparatus for controlling the exposure of a solid state image sensor array of the type which includes a photosensitive semiconductive substrate having disposed on one surface thereof a plurality of photosites, said apparatus comprising means for producing a signal representative of the substrate current resulting from an imagewise exposure of said photosites, means for integrating said signal to provide a ramp signal having an instantaneous amplitude representative of the instantaneous average exposure of said photosites, and means responsive to said ramp signal for controlling the exposure of said sensor array.

4,338,515

ANALOG-DIGITAL CONVERTER FOR THE EVALUATION OF THE OUTPUT SIGNAL OF AN OPTOELECTRONIC SENSOR ELEMENT

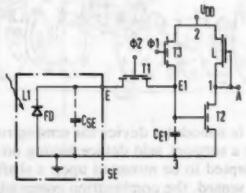
Heiner Herbst, Munich, and Hans-Jörg Pfleiderer, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,647

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1979, 2936492

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—214 R **12 Claims**

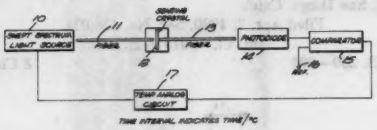


1. Analog-digital converter system which evaluates an analog signal of an optoelectronic sensor element, comprising: an optoelectronic sensor element; an inverter having a switching transistor and series connected load element; a transistor connecting the sensor element with an input of the inverter; the inverter input being connected with a source lead of a reset transistor whose drain lead is at a constant voltage; and the transistor connecting the sensor element with the inverter input being designed as a potential barrier defining transistor.

4,338,516
OPTICAL CRYSTAL TEMPERATURE GAUGE WITH FIBER OPTIC CONNECTIONS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Madan M. Sharma, Palos Verdes, Calif.

Filed Sep. 12, 1980, Ser. No. 186,881
Int. Cl.³ G01J 3/34
U.S. Cl. 250—226 13 Claims

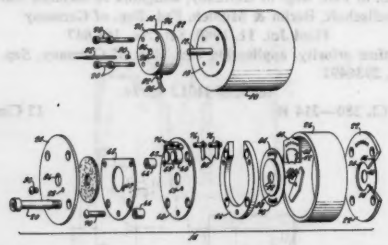


1. A temperature measuring device, comprising: a semiconductor crystal having, an optical high pass characteristic in wavelength terms, the band-edge wavelength between frequencies of maximum and minimum light transmission through said crystal being temperature dependent; a source of light energy of controllable wavelength; first light conducting means for conveying the light energy output of said source to said crystal; a light-to-electric transducer; second light conducting means for conveying light passing from said first light conveying means, through said crystal and to said transducer; scanning means for causing the wavelength of said light energy from said source to vary according to a predetermined function starting from an initial predetermined reference wavelength at least passing through said band-edge wavelength corresponding to all temperatures to be measured; and temperature analog means responsive to said source and said transducer and producing an output signal analagous to the temperature of said crystal as a function of the difference between said predetermined reference wavelength at said band edge.

4,338,517
SHAFT ROTATION SENSOR

Warren L. Perrine, Paraiso Hot Springs, Soledad, Calif. 93960

Continuation-in-part of Ser. No. 3,108, Jan. 15, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,376
Int. Cl.³ G01D 5/36; G01P 3/36
U.S. Cl. 250—231 SE 41 Claims



1. For use in a modular device for sensing rotation of a shaft journalled in a support, said device having no shaft of its own but being adapted to be mounted upon a shaft of which rotation is to be sensed, the combination comprising,

a housing adapted to be fixed to said support and having a housing aperture, said housing being free of any shaft therein,

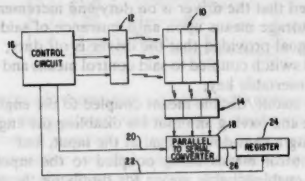
a patterned disc assembly loosely positioned within said housing and having a mounting aperture dimensioned to be a press fit upon a shaft to be inserted therein, and

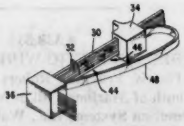
means for loosely retaining said disc assembly within said housing with said mounting aperture substantially concentric with said housing aperture, whereby said shaft may be inserted into said housing aperture and pressed into said mounting aperture to frictionally secure the disc assembly to the shaft for rotation therewith, and said housing may be secured to said shaft support.

4,338,518
POSITION ENCODER WITH COLUMN SCANNING AND ROW SENSING

Michael J. Brienza, Ridgewood, and Richard C. Warner, Morris Plains, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 12, 1980, Ser. No. 186,822
Int. Cl.³ H01J 3/14
U.S. Cl. 250—237 G 4 Claims





1. A position encoder comprising:

a coding member defining a predetermined path and having coded indicia at a plurality of discrete positions along said path, the indicium at each of said positions comprising a rectangular array of code elements forming a first plurality of columns and a second plurality of rows;

a member movable relative to said coding member to any of said plurality of discrete positions;

interrogation means for sequentially scanning column by column the code elements at the position occupied by said movable member;

sensing means associated with the rows of the code element array and operative in synchronism with said interrogation means for providing in sequence parallel groups of encoding signals, each group corresponding to a column scan of said code elements by said interrogation means; and

means for assembling a usable data format from the parallel groups of encoding signals.

4,338,519
ADJUSTABLE BLIP SENSOR INTERFACE FOR MICROFILM READER AND MICROFILM READER PRINTERS

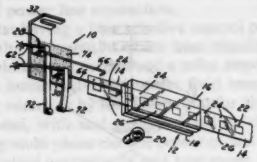
Stephen C. Horste, Pinckney, and Ronald B. Bergman, Ypsilanti, both of Mich., assignors to Visual Systems Corporation, Southfield, Mich.

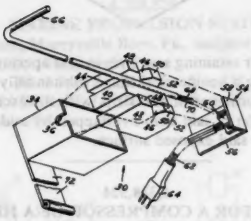
Filed Jul. 31, 1980, Ser. No. 174,395
Int. Cl.³ H01J 5/02
U.S. Cl. 250—239 10 Claims

1. An adjustable blip sensor interface for detecting blips on a strip of microfilm or the like said blips being recorded on at least one track on the microfilm, said sensor adapted to be mounted in the film gate area of a microfilm reader or microfilm reader printer, comprising:

a mounting plate adapted to be secured adjacent to the film gate area; and

at least one sensor module magnetically mounted to said mounting plate;





said sensor module comprise a housing, magnetic means for positioning said sensor module, and detector means secured to said housing and positionable over the film gate area; and

means for adjusting the position of said sensor module relative to said mounting plate.

4,338,520

METHOD OF AND APPARATUS FOR ANALYZING GAS FLOWS INSIDE HOLLOW BODIES

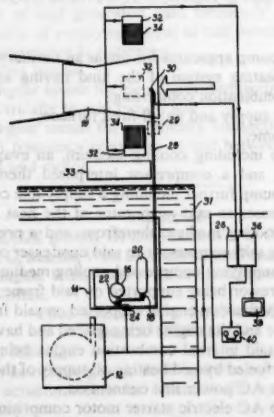
Peter A. E. Stewart, Bristol, England, assignor to Rolls Royce Limited, London, England

Filed May 5, 1980, Ser. No. 146,393

Claims priority, application United Kingdom, May 18, 1979, 7917336

Int. Cl.³ G01F *1/00*

U.S. Cl. 250—356 **10 Claims**



1. A method of visualizing the flow pattern of a gas flowing inside a hollow body comprising the steps of:

irradiating a quantity of a suitable tracer fluid in a chamber with nuclear particles to produce a quantity of a radioactive isotope having a half-life in the range of three seconds to two minutes, and which also emits radiation at an energy level of at least 100 Kev;

injecting a quantity of irradiated tracer fluid directly from said chamber into said gas flow in the form of a thin filament;

detecting the presence or absence of radio-activity from the filament of tracer fluid at a plurality of spacial positions within a specified volume inside the body by means of at least two arrays of collimated detectors mounted around the outside of the body and directed at the expected path of the gas flow;

passing the outputs of the detectors to a computer programmed to determine the instantaneous spacial co-ordinates of the source of the radio-activity detected and, using an image reconstruction algorithm, to construct a visual image of the flow pattern in at least two dimensions; and,

making a record of the visual image for subsequent analysis and measurement.

4,338,521

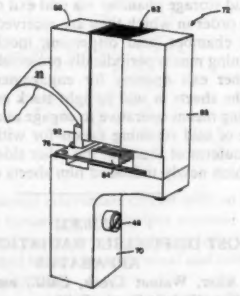
MODULAR RADIATION DETECTOR ARRAY AND MODULE

R. Howard Shaw, Palo Alto, and Charles C. Morehouse, Cupertino, both of Calif., assignors to General Electric Company, Milwaukee, Wis.

Filed May 9, 1980, Ser. No. 148,261

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—366 **19 Claims**

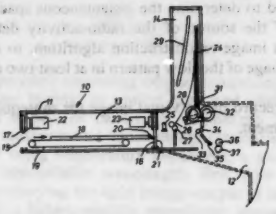


1. A modular detector array for use in detecting radiation in tomographic apparatus and the like comprising a plurality of detector modules, each of said modules comprising a first portion including a plurality of photodiodes and a plurality of scintillator crystals with each of said scintillator crystals cooperatively arranged with one of said photodiodes whereby radiation received by a scintillator crystal generates photons in said scintillator crystal which are transferred to one of said photodiodes, and a second portion including a collimator for directing collimated radiation to a scintillator crystal, said first portion and said second portion being detachably assembled.

4,338,522
DEVICE FOR UNLOADING RADIOGRAPHIC CASSETTES IN DAYLIGHT

Emile F. Stievenart, Hoboken; Hendrik S. Plessers, Wychmaal; Julianus J. Hellemans, Kontich, and Georges J. Neujens, Merksem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 27, 1980, Ser. No. 134,552
Claims priority, application United Kingdom, Mar. 30, 1979, 7911117
Int. Cl.³ G11B 1/00; G65H 5/22
U.S. Cl. 250—468 11 Claims



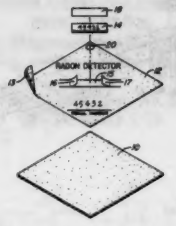
1. A daylight cassette unloading and radiographic film dispensing apparatus comprising a light-tight cassette unloading chamber, a light-tight film storage chamber having at one side of its lower end an entry opening adapted for communication with said unloading chamber and within which chamber exposed film sheets are accumulated as a stack for delivery one by one to a film processor for development of the latent radiographic images, said storage chamber being arranged in generally vertical orientation to hold the film stack therein in generally upright position and having at the opposite side of its lower end a film exit opening which can be placed in light-tight communication with the entrance to the film processor, means for locating a loaded cassette in a predetermined unloading position in said unloading chamber, mechanisms for automatically opening the thus-positioned cassette in said chamber and transferring a film sheet from the open cassette along a generally arcuate path upwardly through said entry opening into said film storage chamber against one side of said stack therein, and a dispensing mechanism operating independently of said transferring mechanism for dispensing film sheets from the stack in said storage chamber via said exit opening one by one and in the order in which they are received from said cassette unloading chamber, said dispensing mechanism comprising stack retaining means periodically projectable across said storage chamber exit opening for engagement with the lower edges of the sheets in said upright stack ano associated sheet withdrawing means operative to engage said lower sheet edges when free of said retaining means for withdrawing from the stack the outermost sheet on the other side from the one side against which newly unloaded film sheets are stacked.

4,338,523
LOW COST DISPOSABLE RADIATION DETECTING APPARATUS

H. Ward Alter, Walnut Creek, Calif., assignor to Terradex Corporation, Walnut Creek, Calif.

Filed Apr. 11, 1980, Ser. No. 139,382
Int. Cl.³ G01T 1/04
U.S. Cl. 250—472 25 Claims

1. A low cost disposable radiation detector comprising:
- a substantially flat layer providing a support surface;
- a strip of track registration material having the property of forming damage tracks therein along paths traversed by alpha particles encountering a surface thereof exposed directly to ambient; and
- a substantially flat top layer adhered to said substrate layer and cooperative therewith for removably securing said strip to said substrate layer, said top layer having an aperture formed therein in a predetermined location and at least one integral tab portion adjacent said aperture bendable out of the plane of said top layer and overlapping a portion of one edge of said strip of track registration

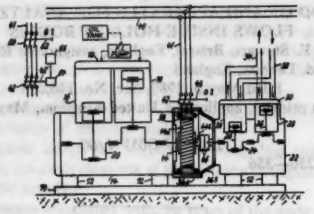


material for retaining said strip in said aperture, said aperture having a geometrical shape substantially coextensive with the perimeter of said strip, with the exception of the edge portion of said strip overlapped by said tab portion, to provide said exposed surface.

4,338,524
DRIVE UNIT FOR A COMPRESSOR OF A HEAT PUMP

Ernst Hatz, and Heinz Eibl, both of Ruhstorf, Fed. Rep. of Germany, assignors to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,199
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814728
Int. Cl.³ F01K 17/02; F02C 6/00; F02N 11/14; H02J 3/00
U.S. Cl. 290—2 7 Claims



1. In a heat pump apparatus for use as an auxiliary heater in a household heating system of the kind having an oil-fired furnace, the combination comprising:
- a heating oil supply and an oil-fired furnace;
- a support frame;
- a heat pump including cooling medium, an evaporator, a condenser and a compressor interposed therebetween, said heat pump further including a supply line connecting said condenser to said evaporator of the heat pump for drawing cooling medium therefrom, and a pressure line connecting said compressor to said condenser of the heat pump for supplying compressed cooling medium thereto, said compressor being supported on said frame;
- an internal combustion engine supported on said frame, said compressor and the engine being spaced and having coaxial shafts, said internal combustion engine being fuel injected and fueled by said heating oil supply of the furnace;
- a multi-phase AC power line connection;
- a multi-phase AC electric starter motor comprising a housing supported between and fixed to said engine and compressor, said starter motor having a stator fixed to said housing with multiple coil windings corresponding to the phases of said multi-phase power line connection, said motor having a rotor fixed to said engine shaft;

a centifugal clutch connecting said rotor of said electric motor to said compressor shaft for driving said compressor only with said engine running at above a defined speed;

an operating switch and a start switch connected in series in a multi-phase current supply line connecting said motor to said AC power line connection;

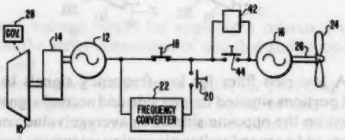
a thermostat having a heat sensitive control portion responsive to the temperature of the heat transfer fluid in said household heating system and a relay responsive to sensing of a household heat transfer fluid temperature fallen below a minimum by said thermostat for closing said start switch and, with said operating switch closed, thereby applying multi-phase electric power to said starting motor and initiating operation of said heat pump.

4,338,525

MARINE PROPULSION SYSTEM

Lee A. Kilgore, Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1981, Ser. No. 222,457
Int. Cl.³ B60L *11/12*; H02P *7/66, 1/52*; H07P *3/24*
U.S. Cl. 290—17 **9 Claims**



1. A marine propulsion system comprising:

a prime mover;

means for controlling the speed of said prime mover;

an alternating-current generator, said generator connected to and driven by said prime mover;

a synchronous motor electrically connectable to an output of said generator;

a fixed pitch marine propeller connected to an output of said motor;

a solid state frequency converter whose input is the frequency of said generator and whose output is a lower frequency which is electrically connectable to said synchronous motor, said frequency converter being capable of maintaining said synchronous motor in synchronous operation when said motor is operating at a speed below that of said generator, said frequency converter being capable of supplying torque to said motor when the rotor of said motor is stationary;

a braking means;

switchgear means for electrically connecting said generator electrically to said motor; and

switchgear means for electrically connecting the output of said frequency converter to and between said generator and said motor.

4,338,526

GARAGE DOOR OPERATOR WITH GAS SENSOR

Richard G. Martin, West Bloomfield, and Maurice R. Brackney, Farmington Hills, both of Mich., assignors to Multi-Elmac, Novi, Mich.

Filed Apr. 14, 1980, Ser. No. 140,047
Int. Cl.³ E05F *15/20*
U.S. Cl. 307—116 **11 Claims**

1. An automatic garage door operating system comprising:

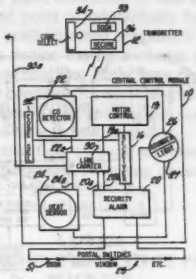
door actuator means for automatically opening the garage door;

a sensor element having an electrical characteristic which is a function of the level of toxic gas in the garage;

toxicity detector means coupled to the output of said sensor element, operative to generate an output signal of a given magnitude after a period of time associated with the level of toxic gas sensed by the sensor element;

comparator means having first and second inputs, and an output;

sensitivity reference means for providing a given threshold level;



means for coupling the output of said toxicity detector means to the first input of said comparator;

means for coupling the output of said sensitivity reference means to the second input of said comparator; and

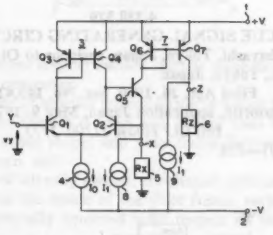
wherein said comparator provides a given output signal for energizing said door actuator means when the output of said toxicity detector means exceeds said threshold level.

4,338,527

VOLTAGE-CURRENT CONVERSION CIRCUIT

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 11, 1980, Ser. No. 158,520
Claims priority, application Japan, Jun. 27, 1979, 54/81127
Int. Cl.³ H03K *5/22*
U.S. Cl. 307—494 **10 Claims**



1. A voltage-current conversion circuit with an input terminal, a conversion terminal and an output terminal comprising:

first and second emitter-coupled transistors having their bases connected to said input terminal and said conversion terminal, respectively;

a load circuit connected between collectors of said first and second transistors and a first power supply terminal;

a constant current source connected between the emitters of said first and second transistors and a second power supply terminal;

a third transistor having its base connected to the collector of said second transistor, its emitter to said conversion terminal; and

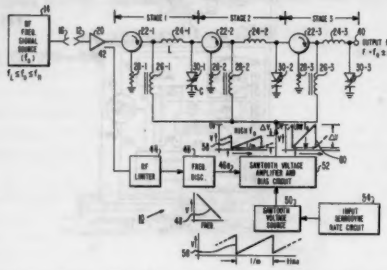
a current mirror circuit connected to said first power supply terminal, the collector of said third transistor, and said output terminal.

4,338,528

OPTIMIZATION CIRCUIT FOR A SERRODYNE FREQUENCY TRANSLATOR

Herbert J. Wolkstein, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,024
Int. Cl.³ G01S *7/38;* H03L *7/04*
U.S. Cl. 307—511 **9 Claims**



1. A serrodyne circuit of the type which is receptive of an input signal of frequency f_O for producing an output signal of frequency F and which includes means producing a sawtooth waveform of repetition period $1 \div m$ where $F = f_O \pm m$ and phase shifting means receptive of said input frequency signal and said sawtooth waveform for shifting the phase of said input frequency at a rate to produce said output frequency, comprising in combination:

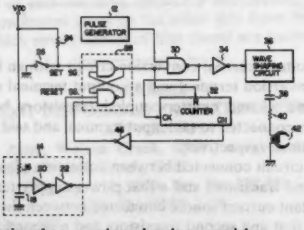
means responsive to said input frequency signal for producing a signal having a amplitude proportional to the input frequency and wherein said means producing said sawtooth waveform includes means responsive to said proportional amplitude signal for producing said sawtooth waveform with a peak-to-peak amplitude proportional to said signal amplitude, said proportionality being such as to cause said phase shifting means to produce a 360° phase shift of the input frequency.

4,338,529

CUE SIGNAL GENERATING CIRCUIT

Kenji Fujibayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,420
Claims priority, application Japan, May 9, 1979, 54-56449
Int. Cl.³ H03K *21/00, 5/13*
U.S. Cl. 307—518 **8 Claims**



1. A cue signal generating circuit comprising:

means for generating a pulse signal;

gate means coupled to said pulse signal generating means for selectively passing the pulse signal generated by said pulse signal generating means;

counter means coupled to said gate means for counting the pulses of said pulse signal passed through said gate means and for controlling said gate means to be nonconductive when the count value reaches a predetermined count value; and

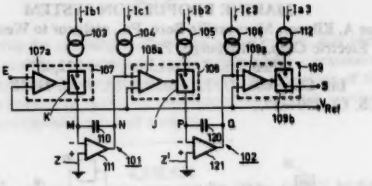
waveform converting means coupled to said gate means for converting the output pulse signal from said gate means into a signal having a prescribed waveform.

4,338,530

LOW-PASS FILTER FOR LOW-FREQUENCY SIGNALS

Jean-Claude G. Six, Versailles, and Jean-Claude Kaire, Caen, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1980, Ser. No. 117,718
Claims priority, application France, Feb. 2, 1979, 79 02759
Int. Cl.³ H03F *3/72, 3/18, 3/183;* H03L *7/00*
U.S. Cl. 307—520 **15 Claims**



1. A low-pass filter for low-frequency signals having first signal portions situated on one side and second signal portions situated on the opposite side of an average value comprising:

a first and a second voltage inverting integrator connected in series with each other, said first integrator being mainly operative for said first portions and said second integrator for said second portions, each of said integrators comprising a voltage-inverting current amplifier between whose inverting input and output a capacitor is included, the non-inverting input being connected to a point of fixed voltage, said integrator further comprising an input threshold comparator and an output threshold comparator, and a constant-integration-current source connected to the output of said amplifier, said inverting input of said amplifier being connected to a constant-control-current source of said integrator via a switch controlled by said input threshold comparator, the input to said filter being connected to said input threshold comparator of said first integrator, said output of said first integrator being connected to said input threshold comparator of said second integrator, said output of said second integrator being connected to said output threshold comparator that is connected to the output of said filter, the capacitance values of said capacitors, the current gain factors of said amplifiers, the currents supplied by said current sources, the relative level of the input voltage and the threshold voltages of said threshold comparators are such that the integration time of each of said integrators is greater than 0.1 and smaller than 1 times the duration of the shortest of the signal portions for which said integrator is operative, and that the discharge time of each of said integrators is, at the most, equal to said integration time of said integrator.

4,338,531

SLIDE WIRE DEVICE SIMULATOR CIRCUIT AND METHOD

Anthony B. Corso, Cincinnati, Ohio, assignor to Corporate Equipment Company, Cincinnati, Ohio

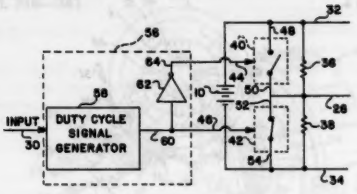
Filed Sep. 15, 1980, Ser. No. 187,257
Int. Cl.³ G05F *1/44, 1/613*
U.S. Cl. 307—540 **10 Claims**

1. A circuit for simulating electrically a slide wire device

with the apparent setting of said slide wire device being dependent upon an input signal, comprising:

first and second electrical resistors, connected electrically in series,

first and second electrical switching means, each having a control input and a pair of switch terminals, and each providing electrical connection between said switch terminals in response to a switch control signal applied to said control input, said first electrical switching means connected electrically in parallel with said first electrical resistor, and said second electrical switching means connected electrically in parallel with said second resistor,



reference voltage means for applying a reference voltage across the series connection of said first and second resistors, and

means, responsive to said input signal, for providing switch control signals to said control inputs of said first and second switching means to actuate cyclically said first and second switching means to opposite switching states, whereby one of said first and second switching means is closed when the other of said first and second switching means is open such that said first and second resistors are alternately shorted electrically, and whereby outputs are provided across said first and second resistors which simulate a slide wire device in output impedance and output voltage levels.

4,338,532

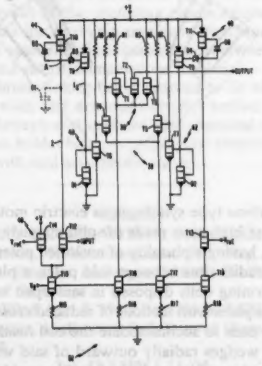
INTEGRATED DELAY CIRCUITS

Russell J. Houghton, Essex Junction, Vt., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 30, 1979, Ser. No. 99,148

Int. Cl.³ H03K *5/13, 3/33*

U.S. Cl. 307—590 **14 Claims**



1. A delay circuit comprising

a bipolar transistor including first and second electrodes and a base region having a given charge storage capacity, said first electrode being connected to a first point of fixed potential,

means for supplying current through said transistor to charge said base region,

means including a switching device coupled to said base region for controlling the current flow through said transistor,

and

means having an input connected to said second electrode and to a second point of substantially fixed potential responsive to a predetermined magnitude of said current, said switching device having a charge storage capacity substantially less than that of the base region of said transistor, a closed condition for sustaining said current in said transistor in a steady state and an open condition for interrupting current flow in said transistor,

whereby the current flow through said transistor decreases exponentially when said switching device is in the open condition.

4,338,533

ELECTRIC MACHINE EXCITED BY PERMANENT MAGNETS

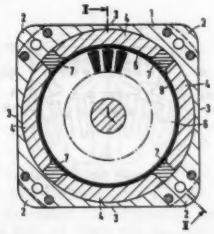
Horst Gräfenschnell, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,101

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738175

Int. Cl.³ H02K *21/26*

U.S. Cl. 310—154 **4 Claims**



1. A permanent magnet excited electric machine including a stator which comprises:

a yoke frame of angular outside shape in which the number of corners thereof is even and greater than two and of circular inside shape, said yoke frame forming the magnetic return, and

a plurality of laterally spaced, arc-shaped permanet magnets secured to the inside of the yoke frame, each being disposed generally centered with respect to two adjacent corners.

4,338,534

POLE-AMPLITUDE MODULATION, POLE-CHANGING ELECTRIC MOTORS AND GENERATORS

Alexander R. W. Broadway, Bristol, England; Gordon H. Rawcliffe, deceased, late of Bristol, England (by Sheila M. Rawcliffe, executrix), and by Caroline S. Rawcliffe, executrix, Norwich, England, assignors to National Research Development Corporation, London, England

Filed Apr. 9, 1980, Ser. No. 138,533

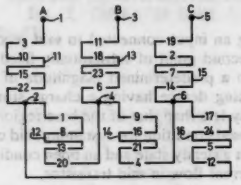
Claims priority, application United Kingdom, May 3, 1979, 7915458

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—184 **6 Claims**

1. A pole-amplitude modulation, pole-number changing electric machine having a three-phase stator winding comprising three phase-winding sections in delta connection and three other phase-winding sections in star connection, coils of the

delta-connected phase-windings and coils of the star-connected phase-windings following each other regularly and alternately around the winding periphery and pole-amplitude



modulation of the combined stator winding being effected by reversal, in current-carrying sense of the series-connected phase windings relatively to the delta-connected phase-windings.

4,338,535

DIRECT CURRENT MOTOR HAVING E-SHAPED INTERPOLES

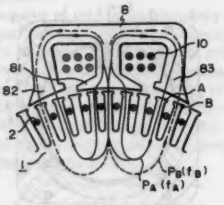
Yoshinori Kohzai, Hino; Shigeaki Oyama, and Yukio Katsuzawa, both of Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Mar. 13, 1980, Ser. No. 129,834

Claims priority, application Japan, Mar. 24, 1979, 54/33804

Int. Cl.³ H02K *1/10*

U.S. Cl. 310—186 **3 Claims**



1. A direct current motor comprising, an armature having armature windings wound thereon and rotating around the central axis thereof, a plurality of main magnetic poles disposed around said armature having field windings wound thereon, and a plurality of E-shaped interpoles disposed at an intermediate position along the outer circumference of said armature between the adjacent main magnetic poles, with a gap being formed between the outer circumference of said armature and said interpoles, each of said E-shaped interpoles consisting of a center pole having an interpole winding wound thereon and two side poles, characterized in that the width of the gap between the outer circumference of the armature and the end surface of each of said side poles increases from the portion of said gap which is remote from said center pole to the portion of said gap which is adjacent to said center pole.

4,338,536

REVERSIBLE DIRECT CURRENT MACHINE WITH MOVABLE STATOR

William M. Hallidy, 620 E. Laurel Ave., Glendora, Calif. 91740

Filed Sep. 20, 1979, Ser. No. 77,324

Int. Cl.³ H02K *13/00*

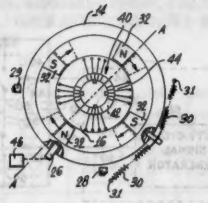
U.S. Cl. 310—191 **14 Claims**

1. A direct current, rotary, electromagnetic, energy conversion machine comprising:

a base;

a stator supported by said base that is movable between angularly displaced first and second positions corresponding to first and second rotational modes of operation of said machine, said stator remaining stationary during continuous operation of said machine in either mode;

at least one magnet connected to said stator to establish a magnetic field orientation of said stator defined by angularly separated north and south poles disposed thereabout, said magnet being rotatably movable with said stator to change the orientation of said field, said first and second positions being so related to each other that the respective positions of said north and south poles are interchanged upon movement of said stator between said position;



a rotor having a segmented winding thereon supported by said base and rotatable within said stator to interact electromagnetically with said magnets; and

commutator means having a predetermined orientation for determining the direction of current flow through segments of said winding in accordance with the positions of said segments, said commutator and stator orientations being oppositely related to each other depending upon whether said stator occupies said first or second position.

4,338,537

SYNCHRONOUS TURBINE TYPE ELECTRIC MOTOR

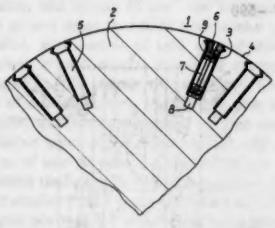
Joachim Eckert, and Franz Spirk, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,200

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2741362

Int. Cl.³ H02K *3/48*

U.S. Cl. 310—214 **2 Claims**



1. In a turbine type synchronous electric motor including a drum rotor of high mass made of solid magnetic material containing iron, having a plurality of unslotted poles, and a plurality of open radial slots between said poles; a plurality of field windings forming coils disposed in said open radial slots surrounding the poles with sections of reduced cross section at the ends of said ends to accommodate the coil heads of said coils; slot closing wedges radially outward of said winding closing said slots; and means for short circuiting said field winding during an asynchronous starting phase, the improvement comprising:

said slot closing wedges being made of solid, non-magnetic steel;

means for insulating said slot closing wedges from said drum rotor;

said field windings being the only windings on said rotor;

a cap surrounding said coil heads at each end; and

means for insulating said caps from said rotor.

4,338,538

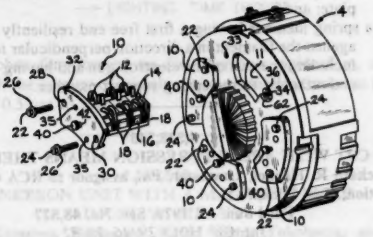
REMOVABLE BRUSH HOLDER FOR DYNAMOELECTRIC MACHINE

Jeffrey T. Major, Cygnet, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Apr. 18, 1980, Ser. No. 141,738

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—242 **4 Claims**



1. In a dynamoelectric machine having an armature contact surface, and an end frame, the combination comprising:

a plurality of separate removable brush holders adapted to be axially removable from the exterior of said machine, said end frame of said machine having apertures therethrough adapted to receive each said brush holder therein;

said end frame including means for receiving attachment means for attaching said brush holder to said end frame, said means for receiving attachment means including means for establishing electrical connection between said dynamoelectric machine and said removable brush holder;

said means for receiving said attachment means being a bolt, said bolt having an axial threaded bore formed therein;

said bolt having a first threaded portion and a second threaded portion of lesser diameter than said first portion, and separated therefrom by a shoulder;

said bolt being adapted to receive a first nut on said first threaded portion, to retain said bolt to said end frame;

said bolt being further adapted to receive a second nut on said second threaded portion to retain an internal connecting wire of said dynamoelectric machine to said bolt;

each said brush holder including means adapted to contact said means for receiving treatment attachment means, to establish said electrical connection between said brush holder and said dynamoelectric machine;

each said brush holder being adapted to be tilted to avoid contact with said armature contact surface while being passed through said aperture, said electrical connection to said brush holder being established by attaching said brush holder with said attachment means.

4,338,539

GAS DISPLAY DEVICE WITH A PROFILED CATHODE

Burkhard Littwin, Hohenschaeftlarn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,422

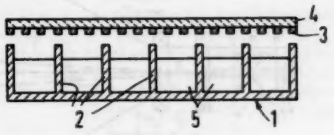
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916368

Int. Cl.³ H01J *17/04*

U.S. Cl. 313—217 **17 Claims**

1. In a gas discharge display device having a hermetically sealed gas filled envelope with parallel front and rear plates, a perforated control plate disposed in said envelope between and parallel to said front and rear plates carrying parallel conductor rows on a side nearest said rear plate and parallel conductor columns on a side nearest said front plate, said columns and rows forming a perpendicular matrix and intersecting at said perforations, said front plate carrying an anode layer and a luminescent screen, the improvement of:

a cathode plate carried on said rear plate having a plurality of spaced raised parallel projections extending in the direction of said control plate, at least some of said projections being aligned with said rows on said control plate and terminating a distance therefrom forming a periodically varying control plate-to-cathode profile, the spacing between said projections and said distance between said projections and said control plate being selected for generating localized discrete areas of gas discharge surrounding said projections upon energization of said cathode plate such that substantially no spreading of said gas discharge occurs through said control plate in order to avoid blurring of an image on the luminescent screen.



4,338,540

INCANDESCENT LAMP

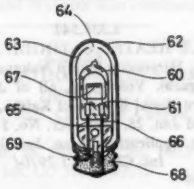
Heinz Sovilla, 2, Terrailles, 1304 Cossonay, Switzerland

Filed Feb. 12, 1980, Ser. No. 120,859

Claims priority, application Switzerland, Feb. 19, 1979, 1590/79; Fed. Rep. of Germany, May 12, 1979, 2919204

Int. Cl.³ H01J *17/16, 61/40*

U.S. Cl. 313—220 **6 Claims**



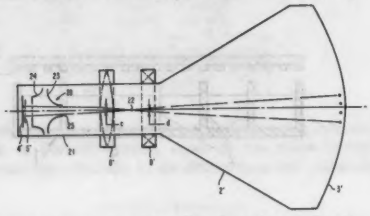
1. An incandescent lamp comprising an inner glass bulb defining and limiting an inner small space containing filament means, an intermediate glass bulb spaced from and surrounding the inner bulb and defining a first intermediate space and an outer glass bulb spaced from and surrounding said intermediate glass bulb and defining a second intermediate space, said inner glass bulb being a hermetically sealed thick-walled quartz glass bulb acting as heat storage and heat radiation reflecting means and closely surrounding said filament means and said intermediate and outer glass bulbs being of thinner glass, at least one of said intermediate spaces being under high vacuum.

4,338,541

MULTIPLE BEAM CATHODE RAY TUBE HAVING REDUCED OFF-AXIS ABERRATIONS

Vernon D. Beck, Ridgefield, Conn., assigno. to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,338
Int. Cl.[3] H01J 29/51, 29/56
U.S. Cl. 313—411 12 Claims



1. A multiple beam cathode ray tube wherein a plurality of electron beams originated by an electron beam source means cross each other only once in said tube at a crossover point before being incident on said screen, said tube having reduced off-axis aberrations, comprising,

a cathode ray tube envelope having a longitudinal axis and having a screen at one end thereof,

an electron beam source means disposed in said envelope at the other end thereof for emitting a plurality of electron beams towards said screen, said electron beam source means being comprised of one or more flat or planar elements,

focussing means disposed between said electron beam source means and said screen for focussing said plurality of electron beams on said screen,

deflection means also disposed between said electron beam source means and said screen for deflecting said plurality of electron beams across said screen, and

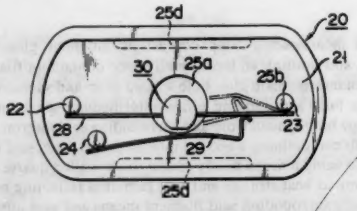
means disposed between said electron beam source means and said deflection means for accelerating said electron beams while simultaneously causing them to converge towards each other, and to cross each other in their respective paths towards said screen at said single beam crossover point which is located further from the electron beam source end of the tube than the focussing means and not closer to said screen than said deflection means.

4,338,542

DIRECTLY HEATED CATHODE ASSEMBLY

Yukio Takanashi, Hiratsuka; Shouji Nakayama, Yokosuka, and Toshiharu Higuchi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 25, 1980, Ser. No. 115,384
Claims priority, application Japan, Jan. 31, 1979, 54-9137
Int. Cl.[3] H01J 29/04
U.S. Cl. 313—446 12 Claims



1. A directly heated cathode assembly for a cathode ray tube electron gun having an axis along which electrons are directed, comprising:

an insulating base plate;

first and second conductive support members attached to the insulating base plate;

a ribbon filament stretched lengthwise between the first and second conductive support members and oriented such that its width direction is parallel with the axis of the electron gun;

a cathode comprising a metal substrate covered with an electron emissive coating and a support portion integral with or fixed to the metal substrate, the coating layer being in a plane perpendicular to the axis of the electron gun and the cathode being mounted to a central portion of the filament via its support portion;

a spring support member attached to the insulating base plate; and

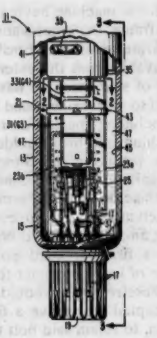
a spring member having a first free end resiliently abutting against the filament in a direction perpendicular to a plane including the axis of the electron gun and having a second end attached to the spring support member.

4,338,543

CRT WITH ARC SUPPRESSION MEANS THEREIN

Richard R. Handel, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 15, 1979, Ser. No. 48,827
Int. Cl.[3] H01J 29/46, 29/82
U.S. Cl. 313—457 3 Claims



1. A cathode-ray tube comprising an evacuated envelope including an electrically-insulating neck, and an electron-gun mount assembly in said neck, said mount assembly comprising a plurality of electrodes including a screen grid electrode and a focus grid electrode closely spaced thereto, said electrodes being mounted on at least two electrically-insulating support rods, said assembly being closely spaced from the inner surface of said neck, and an electrically-conducting band part located against the surface of each of said suppport rods between said focus grid electrode and said neck, said band parts being electrically connected to and supported from said focus grid electrode.

4,338,544

FLUORESCENT LAMP

Akitoshi Komiya, Odawara; Toshiharu Yagi, Hyogo, and Akiyoshi Kondo, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

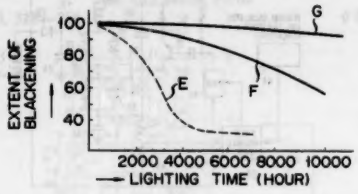
Filed Mar. 6, 1980, Ser. No. 127,549
Claims priority, application Japan, Mar. 14, 1979, 54/28601
Int. Cl.[3] H01J 61/54
U.S. Cl. 313—489 3 Claims

1. A fluorescent lamp, comprising:

a glass envelope containing a mercury gas and at least one other gas selected from neon, xenon and krypton;

a transparent electroconductive film formed on the inner surface of said glass envelope;

an aluminum oxide film formed on said transparent electroconductive film; and



a phosphor film formed on the aluminum oxide film, in which the amount of said aluminim oxide film thickness is from 0.5 μm to 2.0 μm.

4,338,545

MAGNETRON UNIT WITH A MAGNETIC FIELD ADJUSTING MEANS

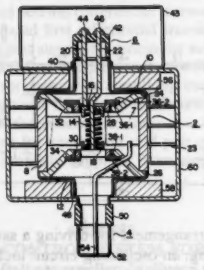
Tokuju Koinuma, Kawasaki; Hisao Saito, Yokohama, and Heihachi Miura, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 25, 1980, Ser. No. 123,949

Claims priority, application Japan, Feb. 28, 1979, 54-23193

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.71 **7 Claims**



1. A magnetron unit comprising:

an anode cylinder provided with a number of resonance cavities defined therein;

a cathode disposed within the anode cylinder and along the axis of the anode cylinder, an interaction space being defined between the anode resonance cavities and the cathode;

at least one pole piece for supplying a magnetic field into the interaction space;

cover means for hermetically sealing the anode cylinder;

magnetic coupling means magnetically coupled with the pole piece;

at least one permanent magnet member magnetically coupled with the magnetic coupling means to supply magnetic energy to the pole piece, and disposed outside the anode cylinder, the permanent magnet member, the pole piece and interaction space being included in a magnetic circuit; and

at least one bimetallic member for adjusting the magnetic resistance of the magnetic circuit to keep the magnetic field intensity in the interaction space substantially constant irrespective of the temperature of the permanent magnet member.

4,338,546

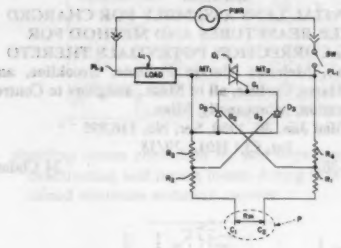
LIQUID LEVEL DETECTION CIRCUIT FOR CONTROL OF LIQUID LEVEL RESPONSIVE DEVICE

Gordon F. Ehret, Alhambra; William N. Rowley, Palos Verdes Estates, and Richard E. Mullen, Tustin, all of Calif., assignors to The Marley-Wylain Company, Mission Woods, Kans.

Filed Nov. 25, 1980, Ser. No. 210,235

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—119 **12 Claims**



1. A liquid presence detection circuit for detecting the presence or absence of a liquid and controlling a load in response thereto, said circuit comprising:

a triggerable thyristor in series circuit with a load, said thyristor/load series circuit connectible across a source of alternating-current power, said thyristor triggerable into conduction to cause a flow of power through the load in response to a trigger signal applied to a trigger input thereof;

a trigger circuit for triggering said thyristor including first and second SCR's connected anode-to-cathode with a first of said anode-to-cathode connections connected to said trigger input and another of said anode-to-cathode connections connected to said thyristor/load series circuit, each of said SCR's including a gate input, the gate inputs of said SCR's connected, respectively, to first and second spaced apart contacts exposed to the liquid to effect detection thereof; and

resistance means connected to said thyristor/load circuit and said first and second contacts to provide a voltage potential thereacross;

whereby the presence of a liquid bridging said first and second contacts causes successive gating of the SCR's to thereby trigger the thyristor into conduction.

4,338,547

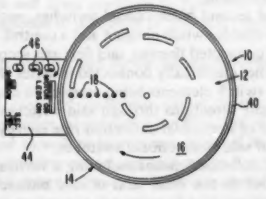
APPARATUS AND METHOD FOR GENERATING LIGHT DESIGNS

Robert E. McCaslin, 1227 Coldwater Canyon, Beverly Hills, Calif. 90210

Filed Jun. 19, 1980, Ser. No. 160,875

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—312 **21 Claims**



1. A light design apparatus comprising: a plurality of light emitting diodes; means mounting the diodes for movement along generally continuous paths with the paths being adjacent

to each other; means coupled with each of the diodes, respectively, for providing a characteristic operating voltage for the diode; means coupled with said providing means for generating an input signal; and switch means coupled with the providing means of each diode, respectively, for applying the input signal to said diodes in a sequence and at a frequency as a function of the characteristic operating voltages of the diodes and as the diodes move along said paths.

4,338,548

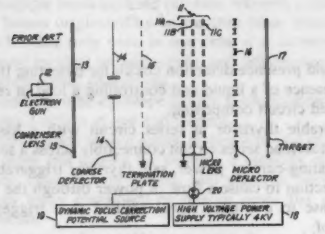
UNIPOTENTIAL LENS ASSEMBLY FOR CHARGED PARTICLE BEAM TUBES AND METHOD FOR APPLYING CORRECTION POTENTIALS THERETO

David C. Bono, Melrose; Marvin Fishbein, Brookline, and Kenneth J. Harte, Carlisle, all of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 30, 1980, Ser. No. 116,895

Int. Cl.³ H01J 29/58

U.S. Cl. 315—382 **24 Claims**



1. A unipotential electrostatic lens for charged particle beam tubes of the electron beam type which may lack coaxial symmetry about the lens axis, said unipotential lens comprising an assembly of axially aligned electrostatic lens elements wherein each lens element has an array of micro lenslet apertures formed therein and with each set of axially aligned micro lenslet apertures in the assembly forming a micro lenslet, means for applying a high voltage excitation potential to one of the electrostatic lens elements, and means for applying a dynamic focus correction potential derived from deflection potentials applied to the charged particle tube to a different electrostatic lens element of the axially aligned assembly from that to which the high voltage excitation potential is applied.

4,338,549

VERTICAL DEFLECTION CIRCUIT

Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 24, 1981, Ser. No. 237,848

Claims priority, application United Kingdom, Mar. 20, 1980, 8009402

Int. Cl.³ H01J 29/72

U.S. Cl. 315—393 **11 Claims**

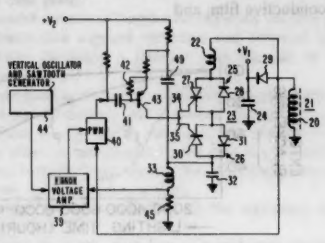
1. A vertical deflection circuit for use in a television receiver, comprising:

first and second bidirectional switches, each comprising: a controllable switch element and a control terminal electrically connected thereto; said first and second bidirectional switches electrically connected in series with said controllable switch elements being coupled to conduct current in opposite directions through said switches;

a source of horizontal deflection rate energy coupled to one end of said bidirectional switches;

vertical deflection means including a vertical deflection coil coupled to the other end of said bidirectional switches; and

a source of pulse-width modulated signals, coupled to said control terminals of said first and second bidirectional switches, for controlling the conductivity of said controllable switch elements in such a manner as to permit conduction of said horizontal rate energy through said first



and second switches into said vertical deflection means for a predetermined duration of each vertical deflection interval.

4,338,550

CIRCUIT FOR OBTAINING SAW-TOOTH CURRENT IN A COIL

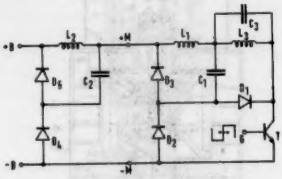
Francesco Marino, Caserta, Italy, assignor to Indesit Industria Elettrodomestici Italiana, S.p.A., Italy

Filed Oct. 29, 1979, Ser. No. 89,582

Claims priority, application Italy, Oct. 30, 1978, 69486 A/78

Int. Cl.³ H01J 29/70

U.S. Cl. 315—408 **6 Claims**



1. A circuit arrangement for driving a saw-tooth current in a coil, comprising: an oscillating circuit including a deflection coil; a trace capacitor and a retrace capacitor, said deflector coil being connected to said trace and retrace capacitors such that said oscillating circuit oscillates freely during the retrace interval; a first diode connected in parallel with the said oscillating circuit and adapted to conduct current during the first part of the trace interval; a controllable semi-conductor switch and a second diode connected in series with one another in a path parallel to said oscillating circuit, said second diode being conductive during a second part of the trace interval and said switch being conductive during part of the trace interval; a third diode; a supply source and an inductor connecting said switch to said supply source so that during that part of the trace interval in which the switch is conductive, energy is stored in the inductor, and such that a part of said energy stored in said inductor is subsequently transferred, during the period in which the switch is not conducting, to the said oscillating circuit via said third diode; said inductor producing a reduction of the voltage across said trace capacitor; means located between said supply source and said inductor for periodically varying, at a frequency substantially equal to that of said saw-tooth current, the voltage supplied to said inductor in a predetermined phase relationship with the conducting rate of said switch, so as to produce a further reduction of the voltage across the trace capacitor.

4,338,551

TWO-PHASE BRUSHLESS MOTOR DRIVING CIRCUIT

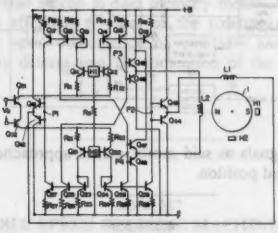
Kastuji Mizumoto, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,768

Claims priority, application Japan, Dec. 15, 1979, 54/163182; Dec. 15, 1979, 163183

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—254 6 Claims



1. A driving circuit for a two-phase brushless motor including a magnetized rotor, first and second magnetically sensitive elements disposed adjacent the magnetized rotor, and a pair of driving coils provided adjacent the rotor, comprising:

(a) biasing means for applying a predetermined bias voltage to said first and said second magnetically sensitive elements;

(b) a first differential pair of transistors coupled to be controlled in response to an output of said first magnetically sensitive element;

(c) a second differential pair of transistors coupled to be controlled in response to an output of said second magnetically sensitive element, said second differential pair being connected in series with said first differential pair, the polarity of said second differential transistors being opposite to that of said first differential transistors;

(d) constant current supplying means for supplying constant currents to said first and said second differential pairs;

(e) current mirror means for supplying currents in proportion to the currents flowing in the first and second differential pairs of the transistors; and

(f) driving means for energizing said pair of driving coils in response to currents supplied from said current mirror means.

4,338,552

AUTOMATIC CONTROL SYSTEM FOR D-C MOTOR

Karl-Heinz Pilz, Baltmannsweiler; Wolfgang Gräter, Stuttgart, and Hans-Dietrich Mayer, Baltmannsweiler, all of Fed. Rep. of Germany, assignors to Richard Hirschmann, Radiotechnisches Werk, Esslingen, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 154,092

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922197

Int. Cl.³ H02P *1/22*

U.S. Cl. 318—266 7 Claims

1. A system for automatically controlling the operation of a direct-current motor having an armature winding in a magnetic stator field on a rotor adapted to be drivingly coupled to a load, comprising:

a supply of direct current;

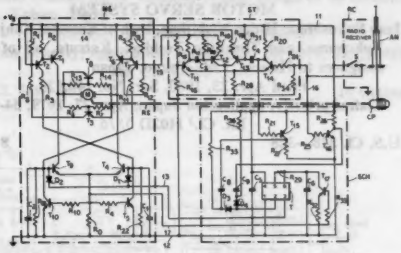
manually operable start means;

electronic switch means activable by said start means to close an energizing circuit connecting said armature winding across said supply;

current-limiting means in said energizing circuit including an impedance element in series with said armature winding;

sensing means independent of said current-limiting means operatively coupled to said rotor for detecting the motor speed and opening said energizing circuit upon said motor speed dropping below a predetermined threshold, said start means being effective to override said sensing means in an initial operating phase;

timing means triggerable by said start means to measure a maximum idling period for said motor; and



disabling means controlled by said impedance element for deactivating said timing means during flow of a predetermined minimum armature current.

4,338,553

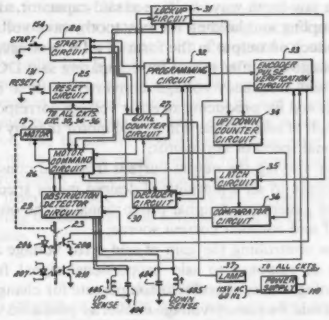
CONTROL SYSTEM FOR A MOTOR ACTUATED DOOR OPERATING MECHANISM

Walter M. Scott, Jr., Madison and Red Bank Rds., Cincinnati, Ohio 45227

Filed Dec. 4, 1979, Ser. No. 100,313

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—266 30 Claims



1. A control system for a door operator, said door operator including an operating mechanism connected to a door and a motor for actuating said operating mechanism for moving said door in either direction between a closed position and an open position, said control system comprising:

a selectively actuable start switch means;

control circuitry connected to said start switch means and to said motor for selectively controlling energization of said motor for moving said door in either direction from one of said closed and open positions to the other of said positions in response to actuation of said start switch means; and

an encoder driven by said motor during movement of said door;

said control circuitry including circuit means associated with said encoder for detecting the direction of movement of said door as well as increments of travel by said door;

said control circuitry energizing said motor for moving said door in said detected direction from one of said closed and open positions toward the other of said positions;

said control circuitry de-energizing said motor when the

sum of said detected increments of travel equals the distance between said closed and open positions.

4,338,554

AUTOMATIC GAIN CONTROL APPARATUS FOR A MOTOR SERVO SYSTEM

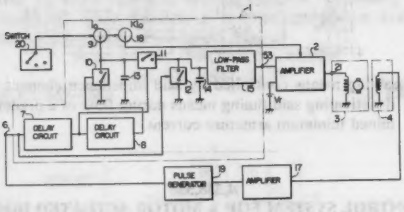
Isao Fukushima; Hideo Nishijima, both of Katsuta; Kenji Satoh, Yokohama, and Tunehiko Teshima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 23, 1980, Ser. No. 143,120

Claims priority, application Japan, Apr. 27, 1979, 54-51508

Int. Cl.³ H02D *5/16*

U.S. Cl. 318—328 **8 Claims**



1. An automatic gain control apparatus comprising:

a frequency-voltage converter including a constant current source, a capacitor charged with the output current from said constant current source, means for discharging said capacitor in response to an input pulse signal having a period proportional to the rotational period of a motor, thereby to form a saw-tooth wave voltage at said capacitor, and means for sampling and holding the saw-tooth wave voltage so as to produce an output in the form of a DC voltage;

error voltage amplifier means for comparing said DC voltage from said frequency-voltage converter with a reference voltage and for producing an error voltage corresponding to the result of said comparison to said motor thereby to set the rotational speed of said motor;

means for varying the output current from said constant current source to set a plurality of desired motor speeds;

means for generating a signal proportional to the output current of said constant current source;

means for controlling the gain of said error voltage amplifier means in response to said proportional signal from said generating means, thereby to compensate for changes in the gain of said frequency-voltage converter produced when the motor speed is changed by said setting means.

4,338,555

PULSE PAIR SERVO APPARATUS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 25, 1980, Ser. No. 181,298

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **5 Claims**

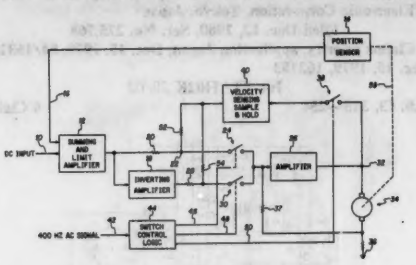
1. Motor control apparatus comprising, in combination:

motor means;

signal supply means, connected to said motor means, for supplying position control signals to said motor means to reposition said motor means using steps of movement wherein each step comprises a predetermined radian unit;

detrimental repositioning force compensation means, connected to said motor means, for supplying bias signals to each step control signal based on the stopping position incurred by the previous step control signal thereto to overcome the detrimental force positioning effects tending to vary the magnitude of said radian unit steps; and

position feedback means, connected between said motor means and said signal supply means, for counteracting



input signals as said motor means approaches a desired command position.

4,338,556

ELECTRONICALLY CONTROLLED THREAD-CUTTING MACHINE

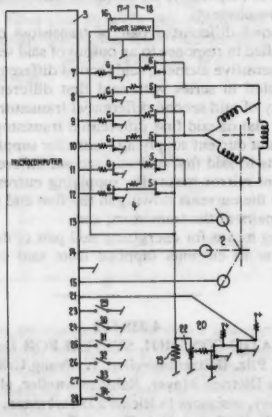
Max Hetzel, Engestrasse 11, 3012 Bern, Switzerland

Filed Nov. 20, 1979, Ser. No. 95,994

Claims priority, application Switzerland, Dec. 4, 1978, 12337/78

Int. Cl.³ G05B *19/18*

U.S. Cl. 318—569 **9 Claims**



1. An electronically controlled machine for cutting a thread in a workpiece, comprising:

a spindle;

a thread-cutting tool coupled to said spindle;

a multi-phase stepping motor coupled to said spindle for rotationally driving said spindle and tool, said tool engaging the workpiece to effect cutting of the thread thereby causing translational movement of said spindle and tool relative the workpiece;

said driving motor having a shaft, a stator with a multi-phase stator winding, a rotor with at least one pair of magnetic poles, and sensor means for producing digital information signals indicative of the angular position of said rotor;

a DC source;

control means connected to said DC source and said multi-phase driving motor for producing cyclic driving pulses and delivering said cyclic driving pulses to said stator winding; and

means connected to said sensor means and said control

means for selecting the sequence of said cyclic driving pulses in response to said digital information signals, said selecting means including counter means for counting a sum of said digital information signals indicative of the number of revolutions of said spindle, memory means for storing a value indicative of a preselected number of revolutions of said spindle, and comparing means for comparing said sum contained in said counter means with said value stored in said memory means, said selecting means effecting reversal of the rotating sense of said motor upon coincidence of said sum and said value, thereby determining the dimension of the thread being cut.

4,338,557

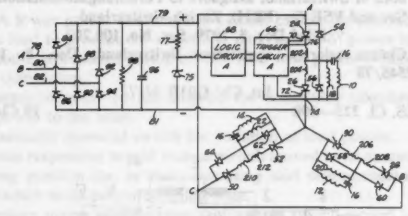
VARIABLE SPEED ELECTRIC MACHINE HAVING CONTROLLED MAGNETIC FLUX DENSITY

Cravens L. Wanlass, 9871 Overhill Dr., Santa Ana, Calif. 92705

Filed Aug. 14, 1979, Ser. No. 66,411

Int. Cl.³ H02P 1/44

U.S. Cl. 318—729 **38 Claims**



1. A polyphase electric motor comprising:

a stator including a core of magnetic material;

a rotor;

a main polyphase stator winding having a winding for each phase wound on said core and encompassing said magnetic material;

a plurality of input terminals adapted to be connected to a voltage source;

a plurality of capacitors;

means connecting the main windings of each phase in a series circuit with one of said capacitors and said series circuits being connected with said input terminals;

a polyphase control winding having a winding for each phase wound on said core to encompass said magnetic material and connected respectively to said plurality of input terminals together with said main windings of each respective phase and the series connected capacitances in said series circuit, windings of the main winding being wound on the core radially adjacent to windings of the control winding;

switch means for each winding of said main polyphase stator winding; and

a trigger source for the switch means, the switch means being operative with the trigger source and the capacitor and each winding of said main polyphase winding to permit, on substantially low load, current flow in opposite directions across the radially adjacent windings of the main winding and the control winding, and such current flow becoming increasingly in the same direction as the load increases towards full load, the trigger source being operable at variable frequencies thereby to vary the motor speed.

4,338,558

INDUCTION MOTOR CONTROL SYSTEM AND METHOD

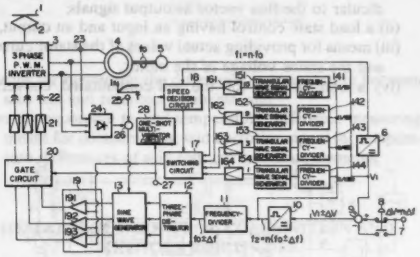
Shigetoshi Okamatsu; Takashi Tsuboi; Masahiko Ibamoto, and Hiroshi Narita, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 199,977

Claims priority, application Japan, Oct. 24, 1979, 54/136459

Int. Cl.³ H02P 5/40

U.S. Cl. 318—802 **16 Claims**



1. In an induction motor control system comprising an induction motor, an inverter for supplying power to said induction motor, and a control device of pulse width modulation type for controlling said inverter, said control device including frequency command generator means for said inverter, means for generating a sine wave of a frequency corresponding to said frequency command, means for generating a triangular wave of a frequency N times the frequency of said sine wave (N: 1 or larger integer), means for deciding one of a plurality of speed ranges in accordance with the speed of said motor, means for selecting by a switching operation a frequency of said triangular wave so as to reduce the value N depending on the increase in the speed range decided by said speed decision means, means for comparing said triangular wave with said sine wave, and means for controlling said inverter in accordance with the output pulse train of said comparator means; the improvement further comprising means for inhibiting said value N from becoming 1 at least for a predetermined period of time during transition of said inverter from an idle state to an active state.

4,338,559

LOAD STATE CONTROL FOR AN ASYNCHRONOUS MACHINE FED BY A CONVERTER

Felix Blaschke, and Leonhard Reng, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,144

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919852

Int. Cl.³ H02P 5/40

U.S. Cl. 318—805 **11 Claims**

1. An apparatus for controlling an asynchronous machine comprising:

(a) a static frequency converter having a line-controlled rectifier with line-commutated rectifier valves connected to a three phase network,

(b) a self-commutating converter supplying power to the machine,

(c) an intermediate DC link coupling the output of the rectifier to the self-commutating converter,

(d) a current control system including:

(i) a current regulator for regulating the stator current of the asynchronous machine to a desired value by controlling the line-commutated rectifier valves, the current regulator having an input,

(ii) input means for a reference flux variable, and

(iii) a function generator having an input coupled to the input means for a reference flux variable and having an output coupled to the input of the current regulator, the function generator responsive to the reference flux variable for deriving the desired stator current value;

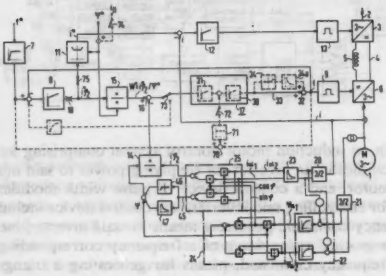
(e) a parallel stator frequency control system including:

(i) an actual value computer adapted to compute, from the actual values of stator current and stator voltage, a variable proportional to the amplitude of the flux vector and a variable proportional to the amplitude of the component of the stator current vector which is perpendicular to the flux vector as output signals;

(ii) a load state control having an input and an output,

(iii) means for providing actual values of the stator current and the stator voltage of the motor,

(iv) a control unit for the self-commutated converter



receiving a frequency control variable from the output of the load state control,

(v) means coupled to the input of the load state control for forming a load state control signal comprising the difference between a load state variable calculated from the actual values of stator current and stator voltage and a load state reference value derived from the input variable to the function generator,

(vi) a first divider having a dividend input to which the variable proportional to flux amplitude is fed, a divisor input to which the variable proportional to the stator current vector component perpendicular to the flux vector is fed, and an output signal comprising the load state variable; and

(vii) means, responsive to the reference flux variable fed to the function generator, for deriving the load state reference value.

4,338,560

ALBEDD RADIATION POWER CONVERTER

Leo W. Lemley, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1979, Ser. No. 84,253

Int. Cl.³ H02L *1/00*

U.S. Cl. 322—2 A **20 Claims**

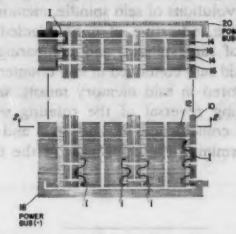
1. A thermoelectric power converter for converting infrared radiation to electricity comprising:

a plurality of heat collectors for absorbing radiation;

a plurality of heat radiators arranged in lateral displacement with said collectors;

a plurality of thermoelectric elements of dissimilar metals, and alternating said dissimilar metals for interconnecting said collectors with said radiators, and said radiators with said collectors, and forming a series connection therewith for conducting electricity,

said radiation being absorbed by said collectors and being changed to heat, said heat flowing to said thermoelectric elements, said elements converting some of said heat to electricity, the remainder of said heat being radiated by said radiators, and said electricity flowing through said



series connections of collectors, thermoelectric elements, and radiators.

4,338,561

HIGH VOLTAGE INSULATION TESTING SYSTEM

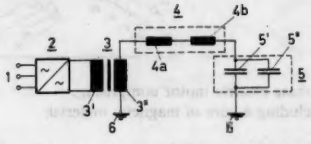
Walter S. Zaengl, Dübendorf, and Felix Bernasconi, Zürich, both of Switzerland, assignors to Forschungskommission des Sev und VSE für (FKH), Zürich, Switzerland

Filed Dec. 5, 1979, Ser. No. 100,703

Claims priority, application Switzerland, Dec. 8, 1978, 12545/78

Int. Cl.³ G01R *31/12*

U.S. Cl. 323—208 **19 Claims**



1. A high voltage testing system for testing the dielectric strength of electric insulation characterized by a capacitive reactance load by generating a rated KVA power in the form of a rated voltage and a rated current across the load, comprising:

a power source for supplying a KVA power less than said rated KVA power;

a transformer having a low voltage primary winding and a high voltage secondary winding, said secondary winding rated for a voltage less than said rated voltage and a current equal to the rated current of said reactance load;

at least one high voltage inductor having a substantially constant inductance value connected in series between said reactance load and said secondary winding, said inductor rated to accept the rated current and rated voltage of said reactance load; and

said inductor and said reactance load forming a tuned resonant circuit, and said power source having a continuously variable frequency tunable to the resonant frequency of said tuned resonant circuit;

wherein the resonant circuit excited by said power source produces high reactive power at the rated KVA necessary to test said insulation, with said power source providing only the active power consumed by said resonant circuit;

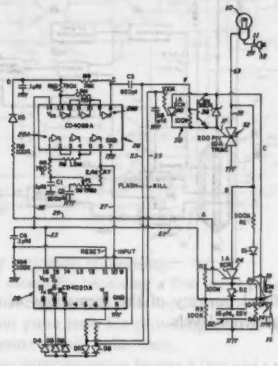
wherein said inductor comprises a serial connection of at least two high-voltage chokes with substantially constant inductance values, at least one of said chokes designed in the form of a bar-core choke.

4,338,562

LOAD CONTROL CIRCUIT WITH TIMED INTERRUPTION

Robert D. Terwilliger, 190 Brookline St., Cambridge, Mass. 02139

Filed Jul. 10, 1980, Ser. No. 168,426
Int. Cl.³ H05B 31/32
U.S. Cl. 323—323 12 Claims



1. A lower power consumption control circuit for controlling a load to provide for automatic interruption of power to the load a preselected period of time after load power is initiated, comprising;

a semiconductor switch adapted for selectively coupling power to the load,

a manually operated switch for initiation of load power,

means responsive to said manual switch moved to its operating position for, in turn, operating said semiconductor switch to its power coupling state,

memory means responsive to said manual switch moved to its operating position for establishing an operating voltage,

said memory means comprising a capacitor,

a timer operated by said operating voltage and defining an "on" time period,

means responsive to said timer and termination of said time period for operating said semiconductor switch to uncouple power to the load,

a gated semiconductor electronic switch coupled in series with said memory capacitor,

one side of said load being connected in series with said semiconductor switch and also in series with the capacitor,

said gated semiconductor electronic switch including means responsive to the voltage across said capacitor for controlling the delivery of power to said capacitor when needed but only for a minor portion of the voltage swing delivered to the load to thereby cyclically recharge the capacitor, the remainder of the power of the voltage swing being delivered directly to the load.

4,338,563

CORROSION MEASUREMENT WITH SECONDARY TEMPERATURE COMPENSATION

Rex V. Rhoades, Anaheim, and James L. Geer, Diamond Bar, both of Calif., assignors to Rohrback Corporation, Santa Fe Springs, Calif.

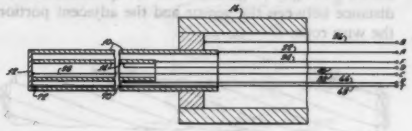
Filed Aug. 11, 1980, Ser. No. 177,208
Int. Cl.³ G01R 27/02
U.S. Cl. 324—65 CR 18 Claims

7. A corrosion probe comprising

a test element adapted to be exposed to an environment of which corrosive characteristics are to be measured,

a reference element mounted adjacent said test element and protected from corrosion by said environment,

resistance responsive means for generating a corrosion signal having a first compensation for temperature of said elements,



means for measuring the difference in temperature between said test and reference elements, and

means responsive to said temperature difference measuring means for compensating said corrosion signal for temperature differences of said test and reference elements.

4,338,564

HEMATOLOGY CONTROL COMPOSITION AND METHODS FOR ITS USE

David D. Mundschenk, Minneapolis, Minn., assignor to R & D Systems, Inc., Minneapolis, Minn.

Division of Ser. No. 47,063, Jun. 11, 1979. This application Nov. 5, 1980, Ser. No. 204,238
Int. Cl.³ G01N 27/00
U.S. Cl. 324—71 CP 10 Claims

1. In the method for determining the number of platelets within a size range in a selected volume of blood involving the preparation of a blood platelet sample from the blood, presenting the sample in counting association with an electronic particle counter including discriminator means having a plurality of possible threshold settings with indicia values of known mathematical relationship to each other for excluding from the count particles of smaller volume than that established by a low threshold setting, and counting the platelets in a defined quantity of said sample by means of said electronic particle counter, the improvement which comprises:

determining the electronic particle volumes established by the said threshold settings by:

presenting in counting association with said electronic particle counter a control blood platelet preparation containing a population of platelets of known count range, size and size distribution,

determining the low threshold setting of said discriminator means which recognizes all platelets in said sample larger than a selected size but excludes particles smaller than that size,

calculating the threshold factor of said discriminator means by applying said known mathematical relationship of the indicia values of said threshold settings to said known count of platelets so recognized by said discriminator; and

determining the particle size corresponding to said possible threshold settings by multiplying the indicia value of each by the threshold factor so determined.

4,338,565

METHOD AND APPARATUS FOR MEASURING THE MOVEMENT OF A SPIRAL WOUND WIRE ROPE

Ronald A. Hall, Sacramento, Calif., assignor to Exploration Logging, Inc., Sacramento, Calif.

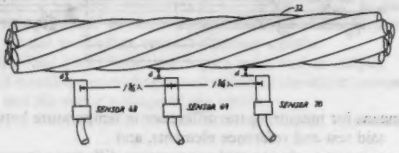
Filed Jul. 11, 1980, Ser. No. 168,167
Int. Cl.³ G01B 7/04
U.S. Cl. 324—206 11 Claims

1. Apparatus for measuring the length of movement of spiral wound wire rope in either longitudinal direction comprising:

(a) three proximity sensors adapted to be located adjacent the wire rope along the direction of movement of the wire

rope, with adjacent pairs of the sensors being spaced to produce signals in response to movement of the spiral windings of the wire rope that are of different phase with respect to one another;

(b) means for deriving an electric signal from each proximity sensor having a magnitude that is representative of the distance between the sensor and the adjacent portion of the wire rope;



(c) means responsive to the electric signals from the proximity sensors for providing alternating current signals free from any low frequency or direct current components; and

(d) means responsive to said alternating current signals for providing digital signals that are representative of the length and direction of movement of the wire rope.

4,338,566

MAGNETIC PARTICLE METHOD USING WATER SOLUBLE ADHESIVE FOR DETECTING FLAWS IN MAGNETIZABLE WORKPIECES

Bruce C. Graham, Arlington Heights, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Jan. 18, 1980, Ser. No. 113,328
Int. Cl.³ G01R *33/12*; G01N *27/84*
U.S. Cl. 324—216 **6 Claims**

1. The method of detecting flaws in a magnetizable workpiece which comprises:

heating said workpiece to a temperature of at least 140° F. (60° C.) in a hot water bath,

removing the heated workpiece from said hot water bath, magnetizing the thus treated workpiece,

applying an indicating composition including ferromagnetic particles, a fluorescent pigment, and a water soluble adhesive to the workpiece,

drying the workpiece to drive off residual water and thereby fix the indicating composition thereon at the location of flaws by means of said adhesive, and

inspecting the workpiece for flaws indicated by the presence of clusters of said indicating composition.

4,338,567

APPARATUS AND METHOD FOR DETERMINATION OF BOUND WATER IN SUBSURFACE FORMATIONS

George R. Coates, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 788,393, Apr. 18, 1977, Pat. No. 4,156,177.
This application Feb. 1, 1979, Ser. No. 8,448
Int. Cl.³ G01V *3/30*
U.S. Cl. 324—338 **8 Claims**

1. Apparatus for determining the bound-water-filled porosity of formations surrounding a borehole, comprising:

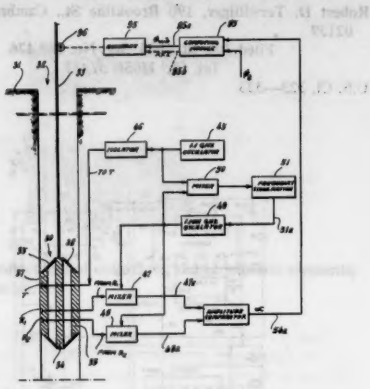
a logging device moveable through the borehole;

means disposed in said logging device for transmitting microwave electromagnetic energy into the formations;

means disposed in said logging device, and spaced from said transmitting means, for measuring, at each of a series of depth levels, the attenuation of microwave energy passing through the formations;

means for generating, at each of said series of depth levels, a signal which is substantially proportional to the square of the measured attenuation; and

means for generating a depth-varying recording of said signals, said recording being indicative of the bound-



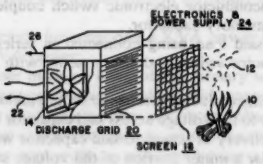
water-filled porosity of the formations at each of said series of depth levels.

4,338,568

METHOD AND DEVICE FOR DETECTION OF A SUBSTANCE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Lien C. Yang, La Canada, Calif.

Filed Mar. 28, 1980, Ser. No. 135,038
Int. Cl.³ G01R *5/28*
U.S. Cl. 324—466 **16 Claims**



1. A device for detecting the presence of particulate substance having predetermined characteristics, said device comprising:

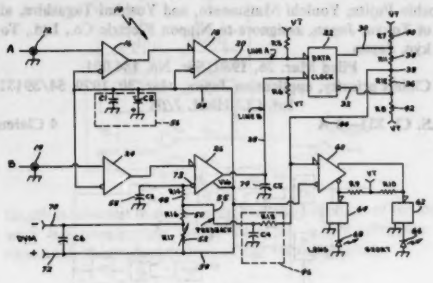
first means responsive to said particulate substance for initiating an electric spark discharge as a result of said substance having a predetermined location with respect to said first means, said electric spark discharge altering said substance predetermined characteristics so that said altered substance will no longer cause an electric spark discharge to be generated; and

second means for determining the number of electric spark discharges generated, the number being related to the number of times a substance having said predetermined characteristics has been present in said predetermined location.

4,338,569
DELAY LOCK LOOP

Dennis M. Petrich, Wayzata, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Mar. 11, 1980, Ser. No. 129,286
Int. Cl.³ H03K 5/153
U.S. Cl. 328—155 **21 Claims**



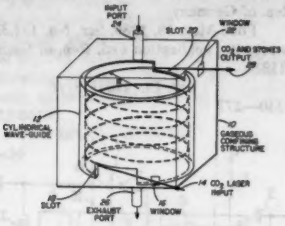
1. A delay lock loop comprising:
first input means for receiving a first input pulse train,
means connected to said first input means for receiving a first input pulse train for providing a fixed time delay in transmission of said pulse train,
a pulse edge detector means having a first and a second input channel for receiving the output of said means for providing a fixed time delay in said first input pulse train on said first channel, said pulse edge detector means producing a voltage output related to the time interval between an edge transition of a pulse on said first input channel and another input on said second input channel,
second input means for receiving a second input pulse train,
a variable delay means connected with said second input means for receiving a second input pulse train for providing a variable time delay output pulse train with respect to said second input pulse train,
feedback means for producing a feedback voltage from the output voltage of said pulse edge detector means to provide an input to said variable delay means to control the time delay output thereof, and
means connecting a time delayed output of said variable delay means to said second input channel of said pulse edge detector means.

4,338,570
RAMAN SCATTERING IN A WHISPERING MODE OPTICAL WAVEGUIDE

Norman A. Kurnit, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 8, 1981, Ser. No. 271,061
Int. Cl.³ H03F 7/00
U.S. Cl. 330—4.6 **7 Claims**

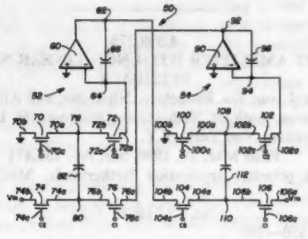
1. A device for Raman scattering a CO_2 laser beam propagated by a waveguide comprising:
waveguide means having a substantially cylindrical surface with a radius R for propagating said CO_2 laser beam in a helical direction along said cylindrical surface, said cylindrical surface having an additional curvature formed therein with a radius ρ which confines said CO_2 laser beam to a small mode volume and a high intensity as said CO_2 laser beam propagates along said waveguide means;
means for confining a hydrogen isotope Raman scattering medium in the propagation path of said CO_2 laser beam as said CO_2 laser beam propagates along said waveguide means to cause Raman scattering of said CO_2 laser beam;
whereby Raman amplification is achieved in said device by providing long interaction path lengths between said CO_2 laser beam and said hydrogen isotope Raman scattering medium at high intensities.



4,338,571
LOW SENSITIVITY SWITCHED-CAPACITOR LADDER FILTER USING MONOLITHIC MOS CHIP

Ian A. Young, Farmers Branch, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 18, 1979, Ser. No. 105,004
Int. Cl.³ H03F 1/34
U.S. Cl. 330—84 **15 Claims**

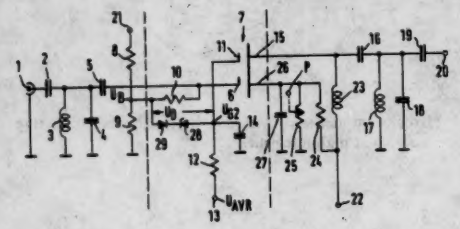


1. A switched-capacitor filter for passing an input audio frequency over a predetermined range of frequencies fabricated on a monolithic semiconductor substrate comprising:
a first amplifier having input and output terminals;
a first integrator capacitor interconnected to said first amplifier;
a second amplifier having input and output terminals;
a second integrator capacitor interconnected to said second amplifier;
a first input switched-capacitor interconnected between said input terminal of said first amplifier and said output terminal of said second amplifier, such that said first input switched-capacitor samples and holds the output of said second amplifier during a first clock phase thereby isolating said output terminal of said second amplifier from said first integrating capacitor and during a second clock phase applies the sampled and held output of said second amplifier to said first integrator capacitor; and
a second input switched-capacitor interconnected between said output terminal of said first amplifier and said input terminal of said second amplifier, such that during said second clock phase said second input switched-capacitor applies the output of said first amplifier to said second integrator capacitor.

4,338,572
HF AMPLIFIER CIRCUIT

Josef H. Schürmann, Oberhummel, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,323
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911514
Int. Cl.³ H03F *3/16*
U.S. Cl. 330—277 12 Claims

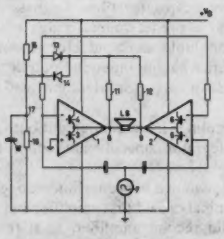


1. HF amplifier circuit comprising an MES or MIS field-effect transistor having first and second gate electrodes; means for applying at the first gate electrode an HF signal to be amplified; means for applying at the second gate electrode a gain control voltage within a selected control voltage range; and diode means having a predetermined conduction threshold voltage connected between said second gate electrode and a node of said amplifier circuit, said node having a fixed potential lying in said control voltage range such that said diode combination becomes conductive when a value of the gain control voltage is reached at which pinch-off of said field-effect transistor commences.

4,338,573
OUTPUT AMPLIFIER WITH NON-LINEAR NEGATIVE FEEDBACK

Martinus J. van den Bungelaar, Nijmegen, and Albert Stoker, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1980, Ser. No. 132,471
Claims priority, application Netherlands, Mar. 20, 1979, 7902160
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—298 7 Claims



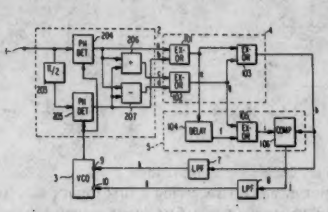
1. A circuit arrangement comprising:

a first amplifier, a second amplifier, said amplifiers having a common input and being operated in push-pull, a load impedance being switchable between the outputs of said amplifiers, a first direct-current passing circuit being included between the output of the first amplifier and a first d.c. bias point of the second amplifier, and a second direct-current passing circuit being included between the output of the second amplifier and a second d.c. bias point of the first amplifier, whereby the resulting d.c. coupling from the output of the first amplifier to the output of the second amplifier and from the output of the second amplifier to the output of the first amplifier is non-inverting, and each of the direct-current passing circuits includes a non-linear current-passing element.

4,338,574
CARRIER RECOVERING CIRCUIT FOR PHASE MODULATED SIGNAL

Toshio Fujita; Youichi Matsumoto, and Yoshimi Tagashira, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,001
Claims priority, application Japan, Mar. 30, 1979, 54/39132
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A 4 Claims



1. A phase locked loop circuit comprising:

a voltage-controlled oscillator for generating a reference phase signal in response to a control signal;

phase detecting means for receiving an N-phase ($N=2^n$, n is a positive integer) phase-modulated carrier wave and said reference phase signal and for detecting said carrier wave on the basis of said reference phase signal, said phase detecting means providing mutually orthogonal outputs;

means connected to the output of said phase detecting means for detecting phase and frequency errors between said modulated carrier wave and said reference phase signal, said phase and frequency error detecting means comprising n-stage multiplication means for multiplying said mutually orthogonal outputs of said phase detecting means, the nth stage of said n-stage multiplication means having first and second inputs, delay means having an input coupled to the first input of said nth stage for delaying said first input of said nth stage of said n-stage multiplication means by a predetermined time, one-stage multiplication means for multiplying the second input of said nth stage by the output of said delay means, and means for voltage-comparing the output of said n-stage multiplication means with that of said one-stage multiplication means to cancel said phase error contained in the outputs of said n-stage multiplication means and one-stage multiplication means; and

means for supplying the outputs of said phase and frequency error detecting means to said voltage-controlled oscillator as said control signal.

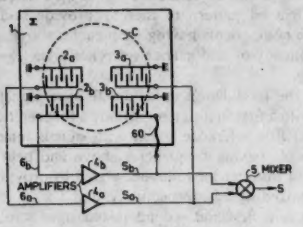
4,338,575
PROCESS FOR COMPENSATING TEMPERATURE VARIATIONS IN SURFACE WAVE DEVICES AND PRESSURE TRANSDUCER UTILIZING THIS PROCESS

Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 12, 1980, Ser. No. 149,244
Claims priority, application France, May 16, 1979, 79 12458
Int. Cl.³ G01N *27/00;* H03B *3/04;* H03H *9/42*
U.S. Cl. 331—65 11 Claims

1. A process for the compensation of temperature variations in a device incorporating two elastic surface wave oscillators and mixer means supplying an output signal, whose frequency is equal to the difference of the oscillation frequency of the two oscillators, the latter having temperature variations of the same sign and unequal values, comprising inserting into the loop of

at least a first one of the oscillators a transmission line which introduces a delay which varies with the temperature, whose



length is selected in such a way that the variation of the delay with the temperature compensates an initial difference between the thermal variations of the two oscillators.

4,338,576

ULTRASONIC ATOMIZER UNIT UTILIZING SHIELDED AND GROUNDED ELEMENTS

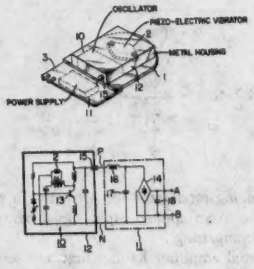
Minoru Takahashi, Funabashi, and Sadao Mitsui, Chiba, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,588

Claims priority, application Japan, Jul. 26, 1978, 53-101891[U]; Sep. 8, 1978, 53-122707[U]

Int. Cl.³ H03B 5/36

U.S. Cl. 331—67 **3 Claims**



1. In an ultrasonic atomizer unit including a chamber base, a piezo-electric vibrator attached to the chamber base, and a driving circuit for energizing the piezo-electric vibrator, the improvement wherein said driving circuit is separated into an oscillator part and a power supply part having a rectifier, said oscillator part is shielded by a metal housing, one of the power supply lines to said oscillator part extends through an aperture in said metal housing and is coupled to said rectifier, and another power supply line to said oscillator part is connected to said metal housing and also is coupled to said rectifier, there is provided a variable circuit element for controlling the output signal from said oscillator part, said variable circuit element is positioned outside said metal housing, a filter circuit is inserted between said oscillator part and said variable circuit element, said oscillator part comprises a self-driving oscillator circuit, said variable circuit element is a variable resistor, said variable resistor and said filter circuit are arranged in an electrode biasing circuit of said oscillator circuit, said oscillator circuit includes a transistor having a grounded collector, and said variable resistor is coupled to the base of said transistor by said filter circuit.

4,338,577

SEMICONDUCTOR LASER APPARATUS

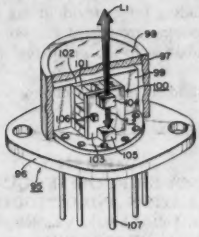
Hideaki Sato; Takashi Kitamura; Koichi Masegi, all of Yokohama, and Kazuo Hoshito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 822,340, Aug. 5, 1977, abandoned. This application Oct. 24, 1979, Ser. No. 87,705

Claims priority, application Japan, Aug. 20, 1976, 51-99495; Jul. 5, 1977, 52-80103

Int. Cl.³ H01S 3/19

U.S. Cl. 372—36 **19 Claims**



1. A semiconductor laser apparatus comprising:

heat radiation means;

a sealing means made of metal and in operative contact with said heat radiation means for defining an airtight space therebetween;

a base housed within said airtight space;

a semiconductor laser tip operative in response to the application of current thereto for emitting a laser beam, the intensity of which is dependent upon temperature, said semiconductor laser tip being fixedly mounted on a portion of said base within the sealed space;

a temperature control means in the airtight space and including a heat absorption portion provided in close contact relation with said base and a heat dissipation portion provided in close contact relation with said heat radiation means;

a laser beam transmitting means associated with at least a portion of said sealing means for transmitting the laser beam emitted from said semiconductor laser tip to the exterior of said sealing means; and

a temperature sensor mounted on said base in intimate thermal contact relationship therewith for sensing the temperature of said base.

4,338,578

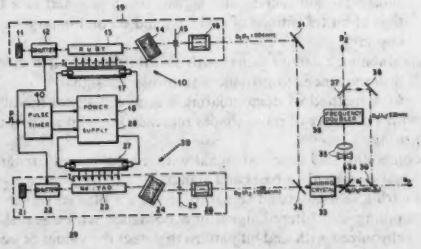
MULTICOLOR PULSED COHERENT-LIGHT SOURCE

Yefim Sukhman, 31-48 41st St., Astoria, N.Y. 11103

Filed Mar. 5, 1980, Ser. No. 127,309

Int. Cl.³ H01S 3/08

U.S. Cl. 372—23 **7 Claims**



1. A source of pulsed multicolor coherent light, comprising:

a first laser emitting a first coherent radiation in the red region of the visible spectrum;

a second laser emitting a second coherent radiation in the infrared part of the spectrum with a wavelength which is twice that of a color in the green region of the spectrum;

light-guiding means optically aligned with said lasers for forming said first and second radiations into collinear beams passing along a common path, said light-guiding means including nonlinear light-transmitting means in said common path for summing the frequencies of said first and second radiations to produce a third coherent radiation in the blue region of the spectrum, said light-guiding means further including frequency-doubling means in a further path for deriving from said second radiation a fourth coherent radiation in the green region of the spectrum; and

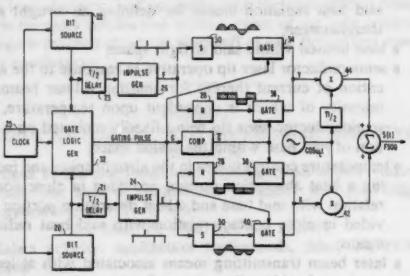
a supply of pulsed energy for pumping said lasers in a correlated manner.

4,338,579

FREQUENCY SHIFT OFFSET QUADRATURE MODULATION AND DEMODULATION

Smith A. Rhodes, Falls Church, Va., assignor to Communications Satellite Corp., Washington, D.C.

Filed Jul. 30, 1980, Ser. No. 173,559
Int. Cl.³ H04L *27/12, 27/14*
U.S. Cl. 332—21 **20 Claims**



1. A method of modulating a signal for transmission comprising:

generating first and second binary bit sequences related to first and second data sequences respectively, said first and second binary bit sequences being offset in time with respect to each other;

selectively generating one of (i) a sinusoidal signal, and (ii) a rectangular signal, for selected portions of said first and second binary bit sequences, to produce respective third and fourth modulation sequences, the polarities of said sinusoidal and rectangular signals selected as a function of the polarities of said first and second binary bit sequences, said one of said sinusoidal and rectangular signals being selected as a function of bit transitions of said first and second binary sequences; and

modulating a carrier signal with said third and fourth modulation sequences to provide a transmission signal.

6. A method of demodulating a received signal modulated with a plurality of pulse shapes representing a bit pattern comprising:

combining said received signal with a synthesized carrier signal to provide a baseband signal;

filtering said baseband signal to provide a filtered signal;

sampling said filtered signal in accordance with a signal synchronized with said bit pattern to detect the values of said bit pattern; and

optimizing said filtering of said baseband signal for the pulse shape having the least energy of said plurality of pulse shapes.

13. A method of synchronizing a receiver with an incoming signal having a carrier reference signal modulated in accordance with a bit pattern to thereby provide said incoming signal with components having frequencies above, below and at the frequency of said carrier reference signal, said method comprising:

removing the modulation on said reference signal in accordance with a first function to provide a first reference signal;

mixing said first reference signal with signals related to said components having frequencies above and below the frequency of said carrier reference signal to provide first and second mixed signals, respectively; and

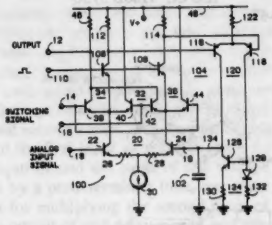
combining said first and second mixed signals to provide a combined signal synchronized with said bit pattern.

4,338,580

SELF BALANCING AMPLITUDE MODULATOR

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,349
Int. Cl.³ H03C *1/06, 1/36*
U.S. Cl. 332—31 T **16 Claims**



1. A self balancing modulator for providing a zero output signal in response to an applied input signal being at a zero reference level, comprising:

a first differential amplifier having first and second inputs and first and second outputs, said first input being adapted to receive the applied input signal, said second input being adapted to receive a variable bias potential;

first switching circuit means coupled with said first and second outputs of said first differential amplifier and receiving a first switching signal for commutating the output signals appearing at said first and second outputs of said first differential amplifier to an output of the modulator;

feedback means responsive to input signals applied thereto for varying said bias potential supplied to said first differential amplifier to balance the output signals from said first differential amplifier; and

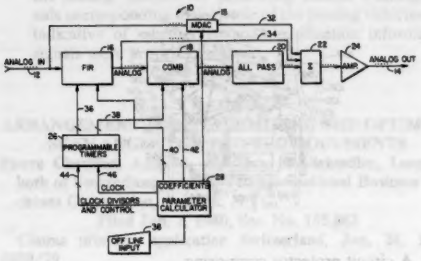
gating switch means coupled between said first and second outputs of said first differential amplifier and respective inputs of said feedback means, said gating switch means being responsive to a control signal for supplying said input signals to said feedback means, said control signal being supplied concurrently with the input signal to said first differential amplifier being at a zero reference level such that said output signals therefrom are balanced to provide a zero output signal.

4,338,581

ROOM ACOUSTICS SIMULATOR

Nelson H. Morgan, Novato, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 5, 1980, Ser. No. 146,966
Int. Cl.³ H03H *15/02;* G10H *1/00*
U.S. Cl. 333—165 12 Claims



8. A method for generating an electronic simulation of acoustic reverberation comprising:

applying a direct analog signal to a sampled time finite impulse response signal processing means having a digitally programmable delay line means and gain weighting means to produce an analog output signal representative of a preselected number of early echoes;

applying said early echoes output signal to an analog comb filter having digitally programmable delay line means and gain weighting means, the output of which is applied to an all pass section to produce a delayed analog output signal representative of a high echo density echo transient; and

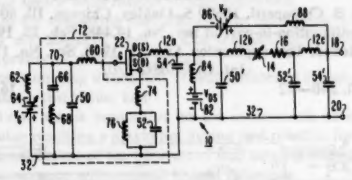
combining said direct signal, said discrete echo signal and said echo transient signal into a composite analog output signal representative of reverberation.

4,338,582

ELECTRONICALLY TUNABLE RESONATOR CIRCUIT

Adolph Presser, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 947,055, Sep. 29, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 70,022
Int. Cl.³ H03H *11/08, 11/10;* H01P *1/38;* H03F *3/193*
U.S. Cl. 333—175 14 Claims



1. An electronically frequency tunable resonant circuit, comprising in combination:

a capacitance means, the value of which is electronically adjustable;

an inductance means coupled in combination with said capacitance means arranged to resonate at a selected one of a range of frequencies dependent on the value of said capacitance;

said combination also including resistance means;

a field effect transistor (FET) characterized by a negative resistance, arranged with said combination to offset the resistance of said resistance means, said FET including a source terminal, a drain terminal, and a gate terminal; and

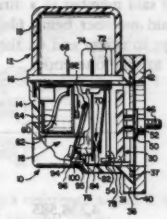
means for providing a feedback path for said FET to produce negative resistance between said source and drain terminals.

4,338,583

MANUAL/MAGNETIC MOTOR CONTACTOR

Raymond J. Mathieu, Ludlow Falls, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Nov. 13, 1980, Ser. No. 206,500
Int. Cl.³ H01H *45/00*
U.S. Cl. 335—186 16 Claims



1. A contactor type electrical switch comprising

at least one pair of normally open primary contacts,

a pair of normally open control contacts,

an electromagnet actuator having a coil and a movable armature influenced by an electromagnetic field created by current flowing through said coil,

means on said armature engagable with one of each of said pairs of contacts to close said one contact against the other contact of the pair,

circuit means connecting said control contacts to said coil and adapted to control supply of power to said coil, and

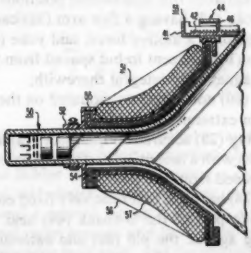
a reciprocable manually operable actuator engagable with one control contact of said pair thereof to close and open said control contacts independently of said electromagnetic actuator and thereby to control said circuit means.

4,338,584

TELEVISION DEFLECTION YOKE MOUNT

John V. Howard, East Petersburg, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,534
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—210 5 Claims



1. A deflection yoke mounting apparatus providing orientation and fixing of the position of a deflection yoke adapted for transverse adjustment on a kinescope, said mounting apparatus comprising:

an insulator disposed about the neck of said kinescope and adapted to be fixedly mounted to said neck at the rear of said insulator, said insulator dimensioned to receive horizontal and vertical deflection coils and an operatively

associated magnetically permeable core to form a deflection yoke;

a plurality of yoke position orientation and fixing means disposed at the front of said insulator, comprising:

guide means incorporating flexible first engagement means; and

a member, slidably mounted in said guide means, and incorporating second engagement means, said second engagement means cooperating with said first engagement means to allow sliding movement of said member in a direction toward said kinescope and to substantially prevent sliding movement of said member in a direction away from said kinescope, said member being placed in abutment with said kinescope to orient and fix the position of said yoke with respect to said kinescope.

4,338,585

SOLENOID HAVING A HINGED ARMATURE

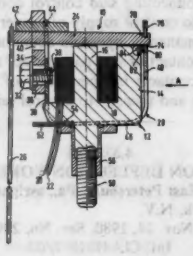
Hans-Werner Volke, Salzkotten, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,755

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943440

Int. Cl.³ H01F 7/14

U.S. Cl. 335—274 **5 Claims**



1. A hinged armature magnet for moving a device such as a printing needle between first and second positions comprising:

a magnetic yoke (12) having a first arm (16) carrying a coil (18) for providing a motive force, said yoke (12) having a second arm (14) adjacent to but spaced from the first arm (16) and magnetically integral therewith;

a bearing pin (80) non-rotatably mounted on the second arm (14) near an extremity thereof;

a bracket spring (28) secured to the yoke (12) and having a U-shank (48) with a mounting part which extends adjacent to but is spaced from the pin (80);

an armature (24) having a first relatively fixed end secured to the mounting part of the U-shank (48) near the pin (80) and bearing against the pin (80) and extending over but normally being spaced from the arms (14, 16) of the yoke (12), the armature (24) having a second relatively free end remote from the first end and adapted to carry said device;

whereby energization of the coil (18) causes the armature (24) to be drawn toward and into contact with the arm (16) and to roll over the pin (80) against the spring force of the U-shank (48);

and stop means (42) for delimiting the return movement of the armature (24) away from the arm (16) when the coil (18) is de-energized.

4,338,586

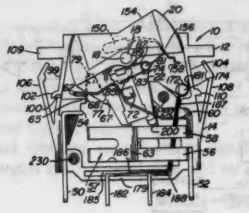
CIRCUIT PROTECTOR HAVING A SLIDABLE LATCH

William F. Scanlon, New Hope, Pa., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Sep. 3, 1980, Ser. No. 183,959

Int. Cl.³ H01H 71/16

U.S. Cl. 337—74 **4 Claims**



1. A circuit protector comprising

a case,

a rocker movable between "on" and "off" positions,

a first spring means within said case for biasing said ROCKER to the "off" position,

a stationary contact,

a movable contact carried by a movable contact blade,

said rocker including an extension,

said extension carrying a pivotal latch lever and a slidable latch,

said latch lever having a detent restraining movement of said slidable latch,

a second spring means biasing said latch lever toward said slidable latch,

said slidable latch including a cam stop engaging said movable contact blade to keep said contacts engaged,

a bimetal engageable on predetermined heating with said latch lever to pivot said latch lever away from said slidable latch,

whereupon said detent is moved out of engagement with said slidable latch permitting said slidable latch to move upwardly under pressure of said movable contact blade and permitting said handle to be pivoted by said spring to the contacts "off" position.

4,338,587

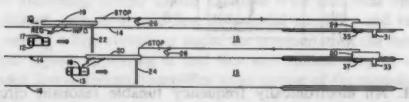
TOLL COLLECTION SYSTEM

Arthur B. Chiappetti, 10600 S. Oakley, Chicago, Ill. 60643

Continuation-in-part of Ser. No. 14,448, Feb. 23, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 177,036

Int. Cl.³ G08G 1/01

U.S. Cl. 340—32 **16 Claims**



1. In a vehicle toll collection system for vehicles, the system including at least one elongated vehicle lane indicia means for directing the vehicles therealong over a roadway, a stationary control unit comprising:

said stationary control unit being disposed at said indicia means having receiving means adapted to receive a series of vehicle identification information signals from each one of a series of the vehicles traveling therepast along the roadway, said signals being coded to identify uniquely the vehicle sending it;

a signal transmitter for generating and sending request signals to the vehicles passing by the stationary control unit

to cause the vehicles to return their vehicle identification signals to said stationary control unit;

memory means responsive to said receiving means receiving identification information signals from passing vehicles for storing the identification information signals; and

logic means responsive to said receiving means receiving all of the identification information signals from each one of the passing vehicles for generating vehicle warning signals corresponding to each one of the passing vehicles and indicative of whether or not identification information signals were properly received.

4,338,588

ARRANGEMENT FOR DETERMINING THE OPTIMUM SCAN ANGLE FOR PRINTED DOCUMENTS

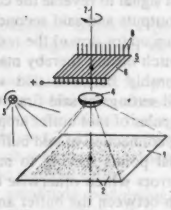
Pierre Chevillat, Adliswil, and Hans R. Schindler, Langnau, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,863

Claims priority, application Switzerland, Jun. 26, 1979, 5939/79

Int. Cl.³ G06K 9/32

U.S. Cl. 340—146.3 H **6 Claims**



1. Apparatus for determining the angle that a document bearing parallel lines of printing is out of predetermined orientation with an angular reference, wherein the improvement comprises:

sensor means including a plurality of elongated parallel transducers for generating signals corresponding to the light incident thereon,

means for projecting an image of a substantial portion of a plurality of lines of the document onto said sensing means,

turning means for rotating one of said document image and said sensor with respect to said reference,

means for measuring the difference in the signals generated by non-adjacent ones of said transducers to produce a plurality of difference signals,

means summing a function of said difference signals to produce a test value, and

read-out means responsive to the occurrence of said test value reaching a maximum during said rotation for storing an indication of the position of said turning means at such occurrence with respect to said reference.

4,338,589

AUTOCALIBRATION OF COMPRESSED A/D CONVERTER

Steven J. Engel, West Whiteland; Richard E. Marsh, Kembles-ville, both of Pa., and Robert P. Rhodes, Newark, Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 13, 1979, Ser. No. 11,822

Int. Cl.³ H03K 13/02

U.S. Cl. 340—347 CC **7 Claims**

1. An analog-to-digital converter system comprising

logging means for producing at its output the logarithm to an unknown base h of an analog signal applied to its input,

an analog-to-digital converter having an input and an output,

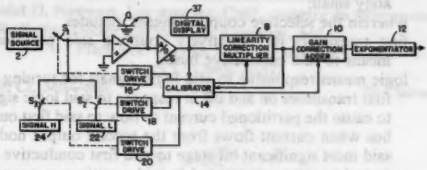
means coupling the output of said log deriving means to the input of said analog-to-digital converter,

a multiplier having an input and an output,

means coupling the output of said analog-to-digital converter to the input of said multiplier,

an exponentiator operating at a desired base and having an input and an output, said input being coupled to the output of said multiplier,

means for applying a reference signal H of known value to the input of said logging means,



means for applying a reference signal L of known value to the input of said logging means,

means coupled to the input of said multiplier for deriving a linearity correction factor equal to the logarithm to the base h of H/L, times logarithm to the base H/L of the desired base, and

means causing said multiplier to multiply signals applied to it by the reciprocal of the correction factor.

4,338,590

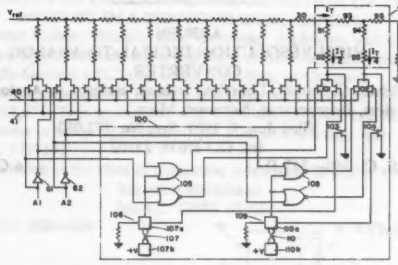
MULTI STAGE RESISTIVE LADDER NETWORK HAVING EXTRA STAGES FOR TRIMMING

Joseph J. Connolly, Jr., San Jose, and James B. Cecil, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 7, 1980, Ser. No. 110,135

Int. Cl.³ H03K 13/02

U.S. Cl. 340—347 CC **2 Claims**



1. Apparatus for performing digital to analog voltage conversions, said apparatus being comprised of

a resistive ladder network containing a plurality of stages; each of said stages having an input node, a first output node, and a second output node; the nominal resistance from said input node to said first output node being of the same value for each stage, and the nominal resistance from said input node to said second output node being of twice said value for each stage; the actual resistance between said input and output nodes varying slightly from said nominal resistance due to various processing limitations; all of said stages being interconnected in series such that said first output node of one stage connects to said input node of the next succeeding stage;

a first conductive bus and a second conductive bus;

means for receiving externally generated logic signals and for selectively coupling said second output nodes to said

output buses in response thereto to cause current to flow from said selectively coupled second output nodes to said output buses;

means for partitioning any current that exits from said first output node of the least significant bit stage of said series; and

means for selectively coupling said partitioned current onto said output buses in response to said logic signals to thereby compensate for any said variations in resistance that causes the current that flows from the second output node of the most significant bit stage to be disproportionately small;

wherein the selective coupling means includes

first transistors for selectively coupling said partitioning means to said conductive buses;

logic means responsive to said logic signals for turning said first transistors on and off in response to said logic signals to cause the partitioned current to flow to said first output bus when current flows from the second output node of said most significant bit stage to said first conductive bus;

a second transistor connected to said partitioning means for selectively diverting the partitioned current to circuit ground; and

programmable means coupled to the logic means and the second transistor for selectively either (a) inhibiting said logic means from turning on and off said first transistors and simultaneously enabling said second transistor to divert the partitioned current or (b) enabling said logic means for turning on and off said first transistors and simultaneously inhibiting said second transistor from diverting the partitioned current;

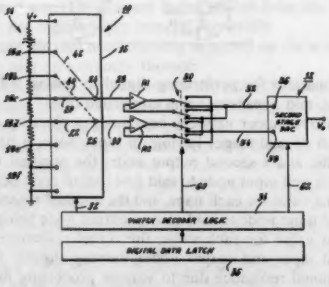
wherein said first and second conductive buses are connected to the inputs of a differential amplifier having a large gain which forces said inputs to a virtual ground and causes the conductive buses to be at nearly the same potential at all times as the potential at the connection of said second transistor to said partitioning means when the partitioned current is diverted so that the impedance through which the partitioned current passes remains unchanged regardless of the selected state of the programmable means.

4,338,591

HIGH RESOLUTION DIGITAL-TO-ANALOG CONVERTER

Michael G. Tuthill, Limerick, Ireland, assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Jun. 9, 1981, Ser. No. 272,053
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **6 Claims**



1. In a two-stage digital-to-analog converter wherein the first stage decodes a set of higher-order bits and the second stage decodes the remaining, lower-order bits, said first stage comprising a series-connected string of resistors energized by a reference voltage and including first switch means responsive to said higher-order bits for stepping up or down the string of resistors to make first and second connections respectively to any pair of adjacent nodal points of said resistor string to produce between first and second reference leads any of the voltages appearing across the resistors of said string;

first and second buffer amplifiers having input circuits connected to said reference leads respectively responsive to the selected nodal point voltages to develop a voltage for the input of said second-stage converter;

said first switch means being operable at each step up (or down) the resistor string to interchange the roles of said buffer amplifiers at each step up (or down) the resistor string by switching the connection to only one of said nodal points, connecting the corresponding buffer amplifier to the nodal point next beyond the nodal point to which the other buffer amplifier is connected while leaving said other buffer amplifier with its connection to the resistor string unchanged, whereby said buffer amplifiers are alternatingly connected to the successive nodal points of said resistor string as said first switch means steps the connections up (or down) the string;

reversing switch means connecting the outputs of said buffer amplifiers to respective input terminals of the second stage of said converter;

said reversing switch means being operable in response to the digital input signal to reverse the connections between said amplifier outputs and said second stage input terminals for each step up (or down) the resistor string effected by said first switch means, thereby maintaining a uniform polarity relationship between said second stage input terminals for all settings of said first switch means;

the interchanged roles of said buffer amplifiers produced by said alternating connection of said buffer amplifiers to said successive nodal points serving to minimize differential non-linearity errors which otherwise could occur due to offset mismatch between the buffer amplifiers.

4,338,592

HIGH ACCURACY DIGITAL-TO-ANALOG CONVERTER AND TRANSIENT ELIMINATION SYSTEM THEREOF

Samuel Wilensky, Concord, Mass., assignor to Hybrid Systems Corporation, Bedford, Mass.

Filed Feb. 11, 1980, Ser. No. 120,386
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC **5 Claims**

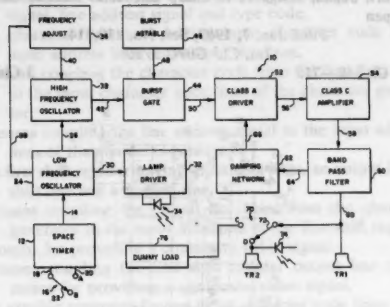
1. A method of compensating a digital-to-analog converter of the type which includes a resistor network which provides equally weighted currents at the output nodes thereof by virtue of providing a string of serially connected trimming resistors, one end of the string being coupled to a voltage source, and main resistors, each, with the exception of the LSB main resistor, being connected at one end thereof to a junction between adjacent trimming resistors and each being selectively coupled at the other end thereof either to a load or ground, comprising the steps of trimming the main resistors starting with the main resistor corresponding to the least significant bit and working towards the main resistor corresponding to the most significant bit, and trimming a trimming resistor immediately to the less significant bit side of an over-trimmed main resistor such that the current generated by each main resistor corresponding to less significant bits generates a current equal to the current generated by the overtrimmed resistor.

4,338,593

RODENT CONTROL APPARATUS AND METHOD

Thomas Mills, Chicago, Ill., assignor to Sound Control, Inc., Algonquin, Ill.

Filed Aug. 18, 1980, Ser. No. 179,268
Int. Cl.³ G08B *3/10*
U.S. Cl. 340—384 E **10 Claims**



1. An apparatus for producing sound waves to repel rodents, comprising:

low frequency oscillator means for producing a frequency modulating ramp signal and an alternating mark space pedestal signal;

high frequency oscillator means for producing an electrical signal oscillating within an ultrasonic frequency band which is frequency modulated through a band of frequencies between 18 and 30 kilohertz in response to the ramp signal and which is alternately turned on and turned off in response to the pedestal signal;

burst means for amplitude modulating the electrical signal by increasing the amplitude of the produced electrical signal asynchronously with the frequency modulation of the produced electrical signal;

amplifier means for amplifying the power of the amplitude modulated electrical signal including negative feedback damping means for reducing the power required for amplifying the power of the amplitude modulated signal; and

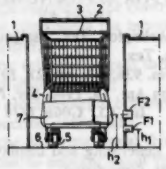
transducer means for converting the amplified signal into sound waves.

4,338,594

TROLLEY CHECK-OUT MONITORING SYSTEM

Lars-Erik Holm, Pollenvägen 12, 722 31 Västerås, Sweden

Filed Nov. 14, 1980, Ser. No. 207,089
Int. Cl.³ G08B *13/18*
U.S. Cl. 340—568 **3 Claims**



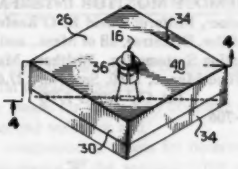
1. A monitoring system for shopping trolleys of the kind used in self-service stores, having a basket for the goods and at least one support surface below said basket which is not normally visible to the sitting checkout operator, wherein the system comprises at least two transmitters/receivers to detect-/indicate an article on said lower surface and a further transmitter/receiver arranged at a lower level than, and between said first-mentioned transmitters/receivers to block operation of the first-mentioned transmitters/receivers in response to the legs of a passing customer, parts of the trolley gear and the like, and a device controlled by first-mentioned transmitter/-receiver in order to provide a signal giving evidence of an article on said lower surface, said transmitters arranged to emit a frequency-modulated infrared light in the form of a beam, which is reflected by said article and details back towards the respective receivers.

4,338,595

MICROWAVE LEAKAGE DETECTOR

Daniel D. Newman, Los Angeles, Calif., assignor to Microwave Radiation Dector Corporation, Landover, Md.

Filed Sep. 9, 1980, Ser. No. 185,880
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—600 **10 Claims**



1. A microwave radiation detector comprising:

a detector casing;

sensing means provided in said casing for sensing radiation;

display means connected to said sensing means for indicatng the presence of radiation; and

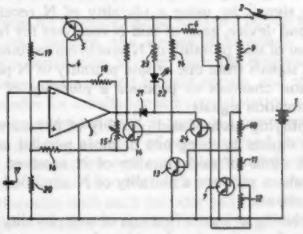
means orienting said detector for insuring that the maximum amount of radiation emanating from a particular source is sensed by said sensing means, said sensing means and said display means containing only two electrical connections.

4,338,596

CIRCUIT FOR INDICATING THE CONDITION OF THE BATTERY IN A PHOTOGRAPHIC CAMERA

Theodor Huber, Munich; Kurt Borowski, Aschheim, and Gerhard Egger, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 898,314, May 19, 1978, Pat. No. 4,211,478. This application Jan. 14, 1980, Ser. No. 112,562
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717191
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—636 **4 Claims**



1. A battery monitoring circuit for monitoring voltage of a battery and indicating such voltage to a user, comprising: an indicator; a transistor connected to the battery and connected in series with the indicator, to permit the indicator to generate

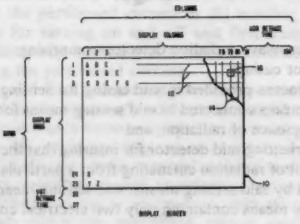
a first continuous indication; an astable multivibrator connected to the battery and connected in series with the indicator to permit the indicator to generate a discontinuous indication and a second continuous indication which is different from said first continuous indication; and a selector connected to the battery, the transistor and the astable multivibrator and cooperating therewith in a manner that the indicator generates the first continuous indication when the battery voltage is in a safe range, the indicator generates the different second continuous indication when the battery voltage is in a marginal range, and the indicator generates the discontinuous indication when the battery voltage is in an unacceptable range, said astable multivibrator being connected in parallel to the main-electrode path of said transistor so that the lower value of the second continuous indication is equal to the lowest permissible battery voltage value.

4,338,597

REMOTE MONITOR INTERFACE

Gordon L. Steiner, Milford; David B. O'Keefe, Westford, and Robert C. Miller, Braintree, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 6, 1980, Ser. No. 127,671
Int. Cl.³ G09G *1/00*
U.S. Cl. 340—706 **27 Claims**



1. A method of communicating N different types of time-related information represented by a plurality of N binary information signals between a first device and a second device along a plurality of N parallel information channels comprising the steps of:

a. synchronizing all of said plurality of N binary information signals within said first device by use of a common clocking signal to produce a plurality of N synchronized binary information signals;

b. transmitting said plurality of N synchronized binary information signals by using a plurality of N drivers in said first device, each of said plurality of N drivers for driving one signal of said plurality of N synchronized binary information signals along one of said plurality of N parallel information channels;

c. receiving said plurality of N synchronized binary information signals by using a plurality of N receivers in said second device, each of said N receivers for receiving one signal of said plurality of N synchronized binary information signals from one of said plurality of N parallel information channels to produce a plurality of N received information signals;

d. amplifying each of said plurality of N received information signals by using one or more parallel amplifiers for each signal of said plurality of N received information signals to produce a plurality of N amplified information signals; and

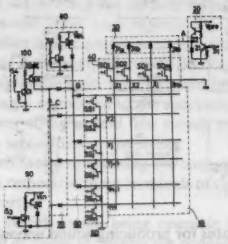
e. combining at least a first one of said plurality of N amplified information signals with at least a second one of said plurality of N amplified information signals to produce at least one modulated information signal comprising a plurality of M output information signals, wherein M is less than N and each of said plurality of M output information signals is either a one of said plurality of N amplified information signals or one of said at least one modulated information signals.

4,338,598

THIN-FILM EL IMAGE DISPLAY PANEL WITH POWER SAVING FEATURES

Toshihiro Ohba; Shuhei Yasuda, and Yoshiharu Kanatani, all of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 7, 1980, Ser. No. 110,214
Int. Cl.³ G09G *3/30*
U.S. Cl. 340—713 **3 Claims**



1. A display device comprising:

a thin-film EL display panel having a plurality of scanning side electrodes and a plurality of data side electrodes;

a scanning side selection circuit connected to said scanning side electrodes of said thin-film EL display panel;

a data side selection circuit connected to said data side electrodes of said thin-film EL display panel;

a first pre-charge circuit connected to said data side selection circuit for supplying a supply voltage lower than a modulation voltage from the data side electrodes to the thin-film EL display panel, said voltage representing a first pre-charge voltage;

a second pre-charge circuit connected to said scanning side electrodes for supplying a difference voltage approximately equal to the difference between said supply voltage and said modulation voltage from the scanning side electrodes to the thin-film EL display panel, said difference voltage representing a second pre-charge voltage; and

a write circuit for supplying a write voltage to said scanning side electrode inclusive of the picture element to be written, said write voltage being supplied through the scanning side selection circuit connected to the scanning side electrodes and through the data side selection circuit connected to said data side electrodes.

4,338,599

APPARATUS FOR ALPHA-NUMERIC/GRAPHIC DISPLAY

Steven Leininger, Arlington, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Division of Ser. No. 926,957, Jul. 21, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,293
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—721 **11 Claims**

1. A system for generating and displaying characters on a video display means, comprising;

video memory means for storing codes a portion of each which is representative of the character that is to be displayed represented as a character code and a portion of which is representative of character type as to being one of alpha-numeric and graphic type identified as a type code,

a first data latch,

means coupling the character code from the video memory means to the first data latch,

timing means including means for generating timing control signals including a latch signal, a blanking signal, line address signals and a shift signal,

means coupling the latch signal to the first data latch for controlling the latching of the character codes from the video memory means to the first data latch, a second data latch connected to the timing means and video memory means for storing control signals including the blanking signal, line address signal and type code,

a character generator having input character code lines, input address lines and output dot lines,

means coupling the character code from the first data latch to the input character code lines of the character generator,

means coupling the line address signal to the input address lines of the character generator,

a first shift register having input data lines, an output line, a shift line and a control line,

means coupling the output dot lines from the character generator to the input data lines of the first shift register,

means for providing a composite video signal,

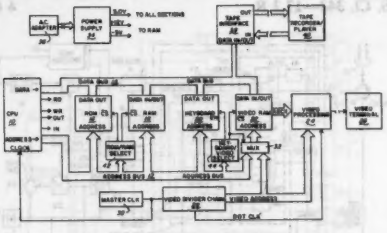
means coupling the first shift register output line to the means for providing a composite video signal,

a graphic generator having input character code lines, input address lines and output dot lines,

means coupling the character code from the first data latch to the input character code lines of the graphic generator,

means coupling the line address signals to the input address lines of the graphic generator,

a second shift register having input data lines, an output line, a shift line and a control line,



means coupling the output dot lines from the graphic generator to the input data lines of the second shift register,

means coupling the second shift register output line to the means for providing a composite video signal,

first gate means having a plurality of input lines and an output line which couples to the control line of the first shift register for controlling the inputting of data into the first shift register,

second gate means having a plurality of input lines and an output line which couples to the control line of the second shift register for controlling the inputting of data into the second shift register,

means for coupling said shift signal to the shift line of said first and second shift registers,

means applying a clock signal in common to an input line of both first and second gate means,

means coupling the blanking signal from said second data latch in common to another input line of both first and second gate means,

said second data latch including bistable means responsive to said type code for establishing mutually opposite first and second select signals,

means coupling the first select signal to another input of only the first gate means to enable clocking of the first shift register when the type code indicates alpha-numeric display,

and means coupling the second select signal to another input of only the second gate means to enable clocking of the second shift register when the type code indicates graphic display.

4,338,600

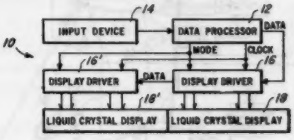
LIQUID CRYSTAL DISPLAY SYSTEM HAVING TEMPERATURE COMPENSATION

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 14, 1980, Ser. No. 168,920

Int. Cl.³ G09G 3/18

U.S. Cl. 340—812 **20 Claims**



1. A liquid crystal display system comprising:

a liquid crystal display segment;

display drive means for alternately coupling the segment to first and second voltages; and

temperature compensation means for determining the ratio of the capacitance of the segment when coupled to the first voltage to the capacitance of the segment when coupled to the second voltage, and for changing the second voltage to converge said ratio toward a predetermined ratio value.

4,338,601

APPARATUS FOR THE STORAGE AND TRANSFER OF INFORMATION

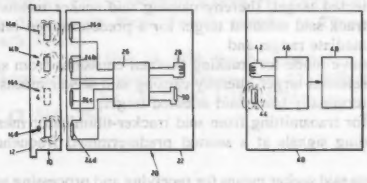
Stanley Nance-Kivell, 40 Stafford Rd., Cowies Hill, Durban, Natal, South Africa

Filed Jun. 18, 1980, Ser. No. 160,341

Claims priority, application South Africa, Jun. 28, 1979, 79/3236

Int. Cl.³ G08C 19/28

U.S. Cl. 340—870.02 **10 Claims**

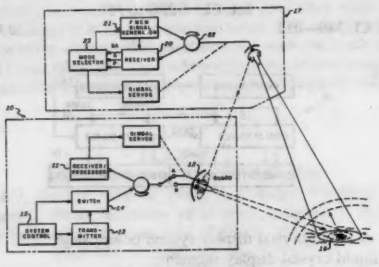


1. Apparatus for monitoring the visits of a person to a plurality of outlying stations, the apparatus including respective encoders for installation at said outlying stations, portable memory means to be carried by said person, and at least one discrete decoder for installation at a central station, said encoders each being provided with at least one permanent magnet arranged in one of a plurality of predetermined fixed patterns to provide each encoder with a predetermined fixed magnetic code unique to that encoder, said portable memory means being interfaceable with each encoder and including magnetically sensitive means for reading the code of each encoder when interfaced therewith and being adapted to store the codes read from successive encoders, said portable memory means being interfaceable with said decoder for transferring thereto the codes stored in the memory means so that it can be ascertained from the transferred codes which, if any, of said outlying stations were visited by said person.

4,338,602
SEMI-ACTIVE GUIDANCE SYSTEM

Robert S. Roeder; W. Baldwin Day, both of Dunedin; Harold W. Hunt, and Robert E. Wilt, both of Clearwater, all of Fla., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 947,975, Oct. 2, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,560
Int. Cl.[3] G01S *13/08*
U.S. Cl. 343—10 7 Claims



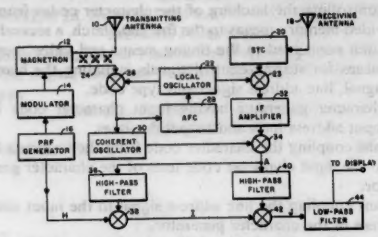
1. An air-to-ground terminal guidance system comprising:
tracker-illuminator means for acquiring and tracking a selected ground target and illuminating said selected ground target with signals at a first predetermined frequency;
seeker means external to said tracker-illuminator means for homing on said selected target having therewithin:
means for determining range between said seeker means and said selected target;
means for tracking said selected target through three modes of operation, each mode switchably activated at predetermined ranges from said selected target, said three modes including:
semi-active mode for tracking reflections from said selected target of said first predetermined frequency signal illumination, thereby causing said seeker means to track said selected target for a predetermined initial range;
active mode for tracking reflections from said selected target of a frequency modulated signal emanating from said seeker means which illuminates said selected target, thereby causing said seeker means to track said selected target for a predetermined intermediate range; and
passive mode for tracking thermal emissions from said selected target, thereby causing said seeker means to terminally track said selected target;
means for transmitting from said tracker-illuminator means guarding signals at a second predetermined frequency; and
means on said seeker means for receiving and processing said guarding signals and said illumination signals to prevent said seeker from tracking said tracker-illuminator means while maintaining said tracking of said reflections from said target of said signal at said first frequency.

4,338,603
SELF ADAPTIVE CORRELATION RADAR

William R. Magorian, Rialto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1967, Ser. No. 643,297
Int. Cl.[3] G01S *7/28*
U.S. Cl. 343—17.1 R 2 Claims

1. A coherent correlation radar system comprising:
(a) transmitting means for transmitting a pulse modulated radio frequency signal at a predetermined pulse repetition frequency,
(b) receiving means for receiving signal echoes produced by the reflection of the transmitted signal from targets of interest,
(c) correlation circuit means coupled to said transmitting

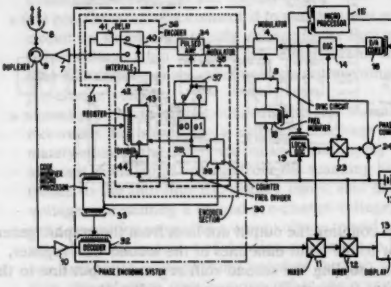


means and to said receiving means for correlating the second order doppler sidebands of the received signal to produce an output target signal that is independent of the target velocity and the transmitted carrier frequency.

4,338,604
PULSED COHERENT DOPPLER RADAR WITH FREQUENCY AGILITY

Christian H. Petitjean, Colombes, France, assignor to Le Materiel Telephonique Thomson-CSF, Paris, France

Filed Jul. 29, 1980, Ser. No. 173,422
Claims priority, application France, Jul. 31, 1979, 79 19633
Int. Cl.[3] G01S *13/24*
U.S. Cl. 343—17.2 R 4 Claims



1. A pulsed coherent Doppler radar with frequency agilities consisting of an antenna for both transmission and reception and a coherent transmit-receive system comprising for transmission a modulator (4) producing pulses of width μ at the repetition frequency (Fr), whose synchronization input is connected to a synchronization circuit (5) and whose output is connected to the input of a power amplifier (7) whose output is connected to the antenna (8) via a duplexer (9), a voltage-controlled transmission oscillator (14) whose output is connected to the input of the modulator (4) and which is phase-locked to a local oscillator (19) with a frequency difference equal to the intermediate frequency produced by a reference oscillator (17), by means of a phase-lock loop which comprises a phase comparator (24) whose first input is connected to the output of the reference oscillator (17), whose second input is connected to the output of a first mixer (23) whose first input is connected to the output of the local oscillator (19) and whose second input is connected to the output of the transmission oscillator (14), and whose output is connected to the control voltage input of the transmission oscillator (14), and which comprises for reception a power amplifier (10) whose input is connected to the antenna (8) via the duplexer (9) and whose output is connected to one of the inputs of a second

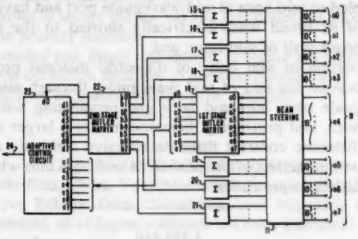
mixer (11) whose output is connected to one of the inputs of a third mixer (12) whose other input is connected to the output of the reference oscillator (17) and whose output is connected to a data analysis device (13), wherein the nominal frequency (F0) of the transmission oscillator (14) is determined by first frequency modification means (15 and 16), wherein the local oscillator (19) consists of a frequency synthetizer whose local output frequency (F1) is determined by second modification means (15 and 21) and whose output is connected to the second input of the second mixer (11), and wherein the reference oscillator (17) piloted by the frequency synthetizer (19) also has its output connected to the input of third means (18 and 15) modifying the repetition frequency (Fr), whose output is connected to the synchronization circuit (5) of the pulse modulator.

4,338,605

ANTENNA ARRAY WITH ADAPTIVE SIDELOBE CANCELLATION

James H. Mims, Millersville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1980, Ser. No. 125,809
Int. Cl.³ H04B 7/00
U.S. Cl. 343—100 LE 6 Claims



1. A method of discriminating against interference of a beam space adaptive antenna system having an array of individual antenna elements arranged to form a plurality of sub-arrays, comprising:

processing the signals of a selected number of said elements of at least one sub-array to provide a plurality of first stage signals, one of said first stage signals representing a zero phase shifted sum of the element signals, each of said remaining first stage signals representing the phase shifted sum of the selected individual element signals,

combining the signals of the antenna elements of each of the remaining sub-arrays to provide for each of the sub-arrays a single sub-array,

processing each of the sub-array signals and the zero phase shift summed first stage signal to provide a plurality of second stage signals, one of said second stage signals being the zero phase shifted sum of the first stage signals, each of said remaining second stage signals representing the phase shifted sum of the sub-array signal,

weighting adaptively each of said remaining first and second stage signals, and

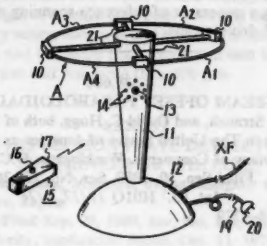
combining the weighted signals with each other and said zero phase shift summed second stage signal to provide the output signal of the array.

4,338,606

ANTENNA SYSTEM WITH VARIABLE DIRECTIVITY

Masahiro Tada, Yokohama; Yoshio Ishigaki, Tokyo; Koji Ouchi, and Koya Nakamichi, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 104,909
Claims priority, application Japan, Dec. 21, 1978, 53-158218; Dec. 21, 1978, 53-158219
Int. Cl.³ H01Q 3/24
U.S. Cl. 343—744 7 Claims



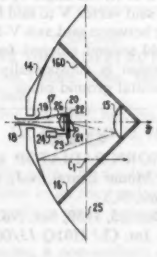
1. An antenna system comprising, a loop antenna divided into four or more conductive members with their ends mounted adjacent to each other to form at least four divisional points between adjacent conductive members, a plurality of feeders with one connected to each of said divisional points respectively, a signal feeding point, and at least one impedance element, an electrical diode switching means connected to said plurality of feeders, to said signal feeding point, and to said one impedance element and electrical control means connected to said electrical diode switching means for selectively connecting said feeding point to one of said plurality of feeders and at the same time for selectively connecting said one impedance element to another of said plurality of feeders which is located on the opposite side of said loop antenna to which said feeding point is connected and a variable impedance connectable by said diode switching means to a third one of said plurality of feeders.

4,338,607

CONICAL SCAN ANTENNA FOR TRACKING RADAR

Serge Drabowitch, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 18, 1979, Ser. No. 104,837
Claims priority, application France, Dec. 22, 1978, 78 36245
Int. Cl.³ H01Q 3/18, 15/23
U.S. Cl. 343—754 9 Claims



1. A conically scanning radar antenna comprising:

a source of electromagnetic waves;

wave-reflecting means centered on an axis for converting waves emitted by said source into a beam of phase-modulated radiation substantially parallel to the axis, said source having a phase center located on said axis and a

direction of maximum radiation inclined at an acute angle to said axis, said phase center substantially coinciding with a focal point of said wave-reflecting means;

drive means coupled with said source for rotating said direction of maximum radiation about said axis as a generatrix of a cone having a vertex substantially coincident with said phase center; and

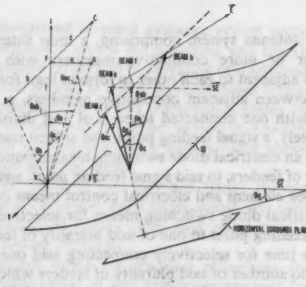
circuit means connected to said source for extracting azimuthal and elevational data relative to a beam-illuminated target from reflected waves intercepted by said well-reflecting means and directed back to said source, said circuit means including a generator of reference scanning signals coupled with said drive means.

4,338,608

TRIPLE-BEAM OFFSET PARABOLOIDAL ANTENNA

Richard G. Strauch, and David C. Hogg, both of Boulder, Colo., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Sep. 30, 1980, Ser. No. 192,261
Int. Cl.³ H01Q *19/17, 3/24*
U.S. Cl. 343—779 **12 Claims**



1. A beam steered antenna system for use in a wind profile measuring system comprising:

a reflecting surface describing a portion of a paraboloidal section having a vertex V and a focal point F defining an axis V-F;

at least first and second antenna feeds offset from said axis V-F for respectively producing at least first and second beam patterns;

said reflecting surface and said at least first and second antenna feeds being oriented such that said first beam pattern has an axis lying along a first predetermined reference direction, wherein the angle θ_1 between the axes of said first beam pattern and said second beam pattern is larger than each of (i) the angle θ_2 between said axis V-F and a line from said vertex V to said first antenna feed, and (ii) the angle θ_3 between said axis V-F and a line from said vertex V to said second antenna feed, and wherein said reference direction is substantially perpendicular to a reference horizontal ground plane.

4,338,609

SHORT HORN RADIATOR ASSEMBLY

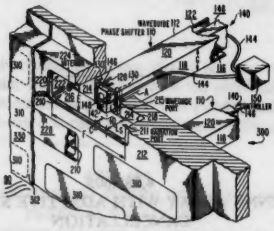
Norman R. Landry, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,168
Int. Cl.³ H01Q *13/00*
U.S. Cl. 343—786 **13 Claims**

1. A short horn radiator assembly for operation over a predetermined band of operating frequencies, said assembly comprising:

a short horn radiator for radiating electromagnetic radiation into an external propagation medium, said horn radiator having a radiation port, a waveguide port, a pair of oppositely disposed broad walls and a pair of oppositely disposed narrow walls oriented perpendicular to said broad walls, said walls extending longitudinally between said radiation port and said waveguide port, said horn having a length from said waveguide port to said radiation port of less than ½ wavelength at any one of said operating frequencies;

a dielectrically loaded waveguide connected to said waveguide port of said horn, said dielectrically loaded waveguide comprising a rectangular waveguide and a body of dielectric material within said waveguide, said waveguide having a pair of oppositely disposed, parallel broad walls and a pair of oppositely disposed, parallel narrow walls oriented perpendicular to said broad walls, said body of dielectric material extending between said broad walls of



said loaded waveguide, said waveguide oriented with its broad walls adjacent the broad walls of said horn, said broad walls of said horn being broader than said broad walls of said waveguide, said waveguide electrically coupled to said horn at said waveguide port and having each of its broad walls electrically shorted to the adjacent broad wall of said horn; and

a portion of said body of dielectric material protruding beyond the end of said waveguide, through said waveguide port, into said horn and terminating within said horn, said protruding dielectric having a larger effective dielectric constant than the effective dielectric constant within the rest of the portion of said horn into which said dielectric protrudes.

4,338,610

MODULAR-HEAD ENDORSER

Kenneth R. Sellen, Dearborn Heights; Jimmie Neill, Walled Lake; Eugene F. Banka, Livonia, and William Barz, Bloomfield, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 18, 1980, Ser. No. 178,875
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **5 Claims**

1. A modular-head endorser for an ink jet printer system comprising:

a droplet generator module, for expelling drops of printing fluid;

means for charging the expelled drops of printing fluid for deflection by an electrical field; and

a plurality of mateable modules, the modules including:

a base module mateable with a primary module;

a primary module engageable with the droplet generator module;

a first deflection module above which the charged drops of printing fluid are expelled, the first deflection module being mateable with the primary module;

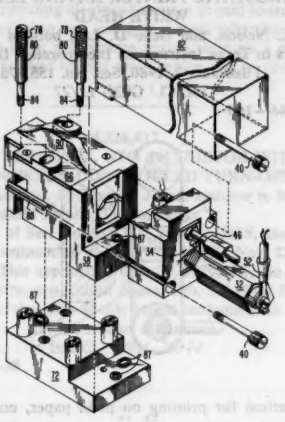
a second deflection module below which the charged drops of printing fluid are expelled, the second deflection module being mateable with the first deflection module;

means for transmitting electrical energy to the second deflection and first deflection modules for generating an

electrical field to deflect expelled, charged drops of printing fluid;

a secondary module mateable with the second deflection module; and

means for releasably securing the primary, first deflection, second deflection and secondary modules to the base module;



wherein the means for releasably securing the primary, first deflection, second deflection, and secondary modules to the base module comprises:

a shroud to secure the second and first deflection modules to the primary module;

a threaded rod, finger tightenable, to secure the primary and first deflection modules to the base module; and

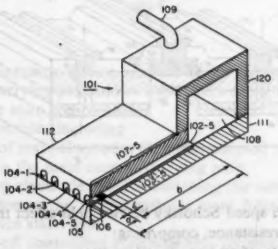
a plurality of gaskets between the modules.

4,338,611

LIQUID JET RECORDING HEAD

Tsuyoshi Eida, Chiba; Yohji Matsufuji; Yasuhiro Yano, both of Tokyo; Tokuya Ohta, Yokohama, and Masahiro Haruta, Funabashi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,581
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—75 **8 Claims**



1. A liquid jet recording head comprising a liquid discharging section constructed with an orifice side end part having an orifice at its tip end for discharging liquid, an energy acting zone which is communicatively connected with said orifice and where energy for forming flying droplets acts on the liquid, a liquid inlet port side end part connected with the energy acting zone and having a liquid inlet port for introducing the liquid into said energy acting zone, and energy generating means for generating said energy, characterized in that the following dimensional relationship is established:

$$\frac{1}{100} \leqq \frac{a}{b} \leqq 1$$

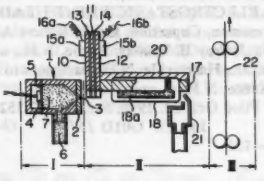
where the length of a liquid flow path from said orifice to said liquid inlet port is L; the length of said energy acting zone along the moving direction of the liquid is l; the length of a liquid flow path from said orifice to said energy acting zone is a; and the length of a liquid flow path from said liquid inlet port to said energy acting zone is b; and that said length L is not less than 0.1 mm and not more than 5 mm, and said length l is not less than 10 μm and not more than 800 μm.

4,338,612

MULTIPLE DEFLECTION PLATE DEVICE FOR LIQUID JET PRINTER OR THE LIKE

Haruhiko Nagayama, Machida, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,524
Claims priority, application Japan, Oct. 11, 1979, 54-129917; Nov. 10, 1979, 54-145855; Apr. 28, 1980, 55-55495
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



2. A multiple deflection plate device for a liquid jet printer, comprising:

a plurality of deflection plate units, each of said units comprising an insulating substrate having a conductive thin-film pattern on each major surface of said substrate, said pattern comprising a deflection plate portion and an elongated connecting lead portion extending from said deflecting plate portion; and

a deflection plate unit holder comprising an insulating material and having a plurality of parallel slits for receiving said deflection plate units in such a manner that only the part of each substrate which contains said connecting lead portion is engaged with a corresponding slit.

4,338,613

INK DROP DEFLECTOR

Antonio S. Cruz-Uribe, Cobalt, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,392
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **11 Claims**

1. An apparatus for deflecting electrically neutral ink drops ejected from an orifice in an ink head to travel in free flight towards a record medium along a predetermined trajectory orifice comprising:

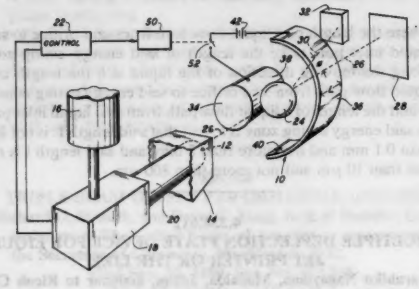
means for producing a non-uniform electric field with a potential gradient oriented along a desired deflection direction with respect to said trajectory, said means including:

a first electrode having a cylindrically shaped first electric field producing surface;

a second electrode having a cylindrically shaped second electric field producing surface facing the first electrode

and being located generally equidistant from the first electric field producing surface;

said first electric field producing surface having a surface area which is smaller than the surface area of said second



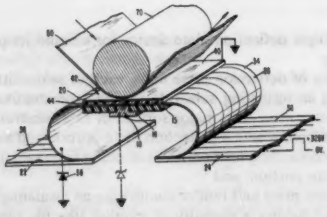
electric field producing surface to produce said potential gradient, whereby said electrically neutral drops are deflected towards said first electrode when said electrodes are electrically energized.

4,338,614

ELECTROSTATIC PRINT HEAD

Gerald L. Pressman, Cupertino, Calif.; Robert A. Moore, Amherst, N.H.; Jeffrey B. Brooks, Keene, N.H., and Robert W. Sengstaken, Jr., Harrisville, N.H., assignors to Markem Corporation, Keene, N.H.

Filed Oct. 22, 1979, Ser. No. 87,152
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—155 **16 Claims**



1. An electrostatic print head comprising:

(a) an elongated source of ions, the source of ions having a longitudinal axis,

(b) a back plane which is adapted to movably support a moving dielectric print medium on which an image is to be formed by ions produced by the source of ions,

(c) an aperture mask having two substantially parallel rows of apertures through which ions may be selectively passed by the application of a pulse to an aperture electrode associated with each aperture within the two rows of apertures, each row of apertures having a center line which is substantially parallel to the longitudinal axis of the ion source and substantially perpendicular to the direction of motion of the dielectric print medium, the aperture mask being disposed between the source of ions and the back plane,

(d) means for establishing an electric field between the aperture mask and the back plane for propelling ions passing through the aperture mask from the elongated source of ions toward the dielectric print medium,

(e) a focus plane disposed between the back plane and the aperture mask having a slot with a center line disposed substantially parallel to the center lines of the aperture rows, and substantially perpendicular to the direction of motion of the dielectric print medium, for modifying the electric field between the aperture mask and the back plane upon the application of a bias potential to the focus plane, and

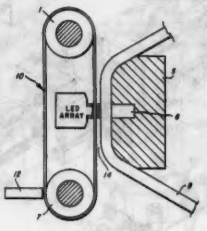
(f) means for applying a bias potential to the focus plane.

4,338,615

ELECTROSTATIC PRINTER HAVING LED ARRAY WRITE HEAD

William E. Nelson, and Gene D. Lee, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1980, Ser. No. 155,875
Int. Cl.³ G03G *13/22*
U.S. Cl. 346—160 **10 Claims**



7. A method for printing on plain paper, comprising the following steps;

(a) delivering a constant supply of unpatterned particulate medium on an electrically charged substrate incorporating a photoconductive substance;

(b) selecting and releasing a pattern of particles of said medium from said supply;

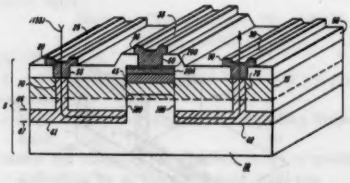
(c) transferring said released pattern of particles across an air gap to a substrate.

4,338,616

SELF-ALIGNED SCHOTTKY METAL SEMI-CONDUCTOR FIELD EFFECT TRANSISTOR WITH BURIED SOURCE AND DRAIN

Izya Bol, Hawthorne, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,627
Int. Cl.³ H01L *21/265*
U.S. Cl. 357—15 **3 Claims**



1. A high speed Schottky barrier field effect transistor with low series resistance, comprising:

a substrate of one conductivity type;

a channel layer of the other conductivity type extended downward from a major surface of said substrate;

a source region of said other conductivity type buried within said substrate below said channel layer;

a drain region of said other conductivity type buried within said substrate below said channel layer;

Schottky barrier gate means forming a rectifying junction with a portion of said channel, said gate means providing,

when properly biased, control of the current flow between said source region and said drain region;

said barrier gate means being disposed between said source and drain regions in the horizontal direction, with one edge of said barrier gate means being aligned substantially vertically with an edge of said source region and with another edge of said barrier gate means being aligned substantially vertically with an edge of said drain region; and

means for providing electrical contact to said source region, said drain region and said gate means, whereby a current flow path from said source region through a portion of said channel and to said drain region can be controllably achieved.

4,338,617

FOUR TERMINAL GTO THYRISTOR WITH TRANSISTOR CONTROLLED TURN-OFF

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

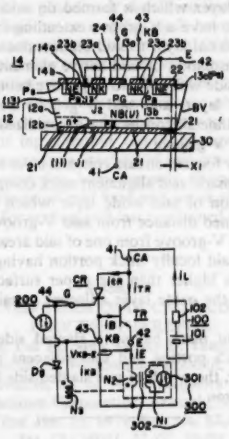
Continuation of Ser. No. 911,717, Jun. 21, 1978, abandoned, which is a continuation of Ser. No. 743,670, Nov. 22, 1976, abandoned. This application Oct. 29, 1979, Ser. No. 89,156

Claims priority, application Japan, Feb. 12, 1976, 51-14200

The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **5 Claims**



1. A semiconductor device adapted to be connected in a main current carrying path and switched between a high and a low impedance state comprising:

(A) four electrodes including

(a) a pair of main electrodes (41), (43) adapted to be connected in the main current carrying path,

(b) a gating electrode (44) for switching the semiconductor device to the low impedance state from the high impedance state, and

(c) a turn-off controlling electrode (42) for switching the semiconductor device to the high impedance state from the low impedance state;

(B) first semiconductor means including

a first semiconductor region consisting of four layers with alternate layers of opposite conductivity type thereby forming a thyristor with two outer layers and two inner layers,

the outer layers of the thyristor directly connected between the pair of main electrodes (41), (43), and one of the two inner layers of the thyristor electrically connected to the gating electrode (44),

the thyristor through which most of the current of the main current carrying path passes is in its low impedance state;

(C) second semiconductor means including

a second semiconductor region having three alternate layers of opposite conductivity type thereby forming a transistor with two outer layers of one conductivity type separated by a base layer of opposite conductivity type,

the two outer layers of the transistor electrically connected between the turn-off controlling electrode (42) and one (41) main electrode, and the base layer of the transistor electrically connected to the other (43) main electrode; and

(D) turn-off controlling means (300 or 400) connected between the turn-off controlling electrode (42) and the other (43) main electrode for applying a pulse to the turn-off controlling electrode to turn on the transistor and to turn off the thyristor and for subsequently removing the pulse to turn off the transistor; wherein

(E) the transistor is made conductive only by said pulse.

4,338,618

COMPOSITE STATIC INDUCTION TRANSISTOR AND INTEGRATED CIRCUIT UTILIZING SAME

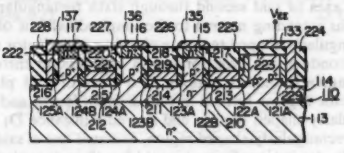
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation-in-part of Ser. No. 902,965, May 4, 1978, Pat. No. 4,198,648. This application Nov. 1, 1979, Ser. No. 90,496

Claims priority, application Japan, May 15, 1977, 52-55778

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—43 **18 Claims**



1. A composite static induction semiconductor device comprising:

a first and a second static induction transistor, both of which being formed in a single common semiconductor body,

said first transistor including:

a first semiconductor layer; a heavily-doped source semiconductor region having a first conductivity type and provided in said first semiconductor layer; a heavily-doped drain semiconductor region having said first conductivity type and provided in said first semiconductor layer; a current channel having said first conductivity type and provided in said first semiconductor layer between said drain and said source; and a heavily-doped gate semiconductor region having a second conductivity type opposite to said first conductivity type and provided adjacent to said current channel to define a boundary of said current channel,

said second transistor including: a second semiconductor layer; a heavily-doped source semiconductor region having said first conductivity type and provided in said second semiconductor layer; a heavily-doped drain semiconductor region having said first conductivity type and provided in said second semiconductor layer; a second current channel having said first conductivity type and provided in said second semiconductor layer between said second transistor drain and source; and a heavily-doped gate semiconductor region having said second conductivity type and located adjacent to said second current channel to define a boundary of said second current channel,

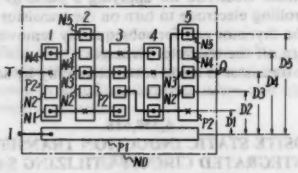
said gate of said second transistor being electrically connected to both said drain of said second transistor and said gate of said first transistor, said second transistor having a variable internal resistance versus drain-source voltage characteristic, said sources of said both transistors being electrically connected to each other and being formed in a portion of said single common semiconductor body.

4,338,619

FLIP-FLOP CIRCUIT

Masayuki Miyake; Takeo Sekino; Masashi Takeda, and Yasuharu Baba, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 3, 1980, Ser. No. 156,207
Claims priority, application Japan, Jun. 8, 1979, 54-72520
Int. Cl.³ H01L 27/04; H03K 19/091
U.S. Cl. 357—46 6 Claims



1. A T flip-flop circuit comprising, a substrate of semiconductor material of a first conductivity type, a first generally rectangularly-shaped region of a second conductivity type formed in said substrate, second through sixth generally rectangularly-shaped regions of a second conductivity type formed parallel to each other in said substrate and the longitudinal axes of said second through sixth rectangularly-shaped regions extending normal to the longitudinal axis of said first rectangularly-shaped region, a plurality of collector regions of first conductivity type formed in said second through sixth rectangularly-shaped regions, first ones of said plurality of collector regions formed in said second, fourth and fifth rectangularly-shaped regions and spaced a distance D_1 from said first rectangularly-shaped region, a second one of said plurality of collector regions formed in said fourth rectangularly-shaped region and spaced a distance of D_2 from said first rectangularly-shaped region, third ones of said plurality of collector regions formed in said third, fourth and sixth rectangularly-shaped regions and spaced a distance D_3 from said first rectangularly-shaped region, fourth ones of said plurality of collector regions formed in said second and fifth rectangularly-shaped regions and s-paced a distance D_4 from said first rectangularly-shaped region, fifth ones of said plurality of collector regions formed in said third and sixth rectangularly-shaped regions and spaced a distance D_5 from said first rectangularly-shaped region and $D_1<D_2<D_3<D_4<D_5$, a plurality of base regions located in said second through sixth rectangularly-shaped regions with the base regions in the second and fifth rectangularly-shaped regions located at a distance of D_3, the base regions in the third and sixth rectangularly-shaped regions located at a distance D_1, the base region in the fourth rectangularly-shaped region located at distance D_4, the base region in said fifth rectangular region located at a distance D_3, and said base region in said third rectangularly-shaped region electrically connected to said first ones of said plurality of collector regions in said second and fourth rectangularly-shaped regions, said base region in said fourth rectangularly-shaped region electrically connected to the fourth ones of said plurality of collector regions in said second and fifth rectangularly-shaped regions and to said fifth one of said collector region in said third rectangularly-shaped region, said base region in said fifth rectangularly-shaped region electrically connected to said third ones of said plurality of collector regions in said third and fourth rectangularly-shaped region, and to the fifth one of said collector region in said sixth rectangularly-shaped region, said base region in said sixth rectangularly-shaped region electrically connected to said first collector region in said fifth rectangularly-shaped region and to said second collector region in said fourth rectangularly-shaped region.

4,338,620

SEMICONDUCTOR DEVICES HAVING IMPROVED ALIGNMENT MARKS

Yunosuke Kawabe, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 71,085, Aug. 31, 1979, Pat. No. 4,233,091.
This application Apr. 4, 1980, Ser. No. 137,804
Claims priority, application Japan, Aug. 31, 1978, 53-106677
Int. Cl.³ H01L 21/76, 21/95
U.S. Cl. 357—50 7 Claims

1. A semiconductor device having plural areas for active elements and at least one alignment mark apart from said areas for impurity introducing and conductor pattern forming steps for producing said semiconductor device, said device comprising

a semiconductor substrate,

an epitaxial layer which is formed on said semiconductor substrate to have a V-groove extending from the surface of said epitaxial layer to said semiconductor substrate for V-groove isolation of said active elements in said plural areas, the side walls of said V-groove being coated with a thin oxide layer, and said V-groove being filled with polycrystalline silicon having an oxidized portion at the top of said V-groove

an oxide layer formed on said epitaxial layer to comprise said alignment mark, said alignment mark comprising a locally thick portion of said oxide layer which is located at a predetermined distance from said V-groove on the other side of said V-groove from one of said areas for said active elements, said locally thick portion having an upper surface that is higher than the upper surface of at least a portion of the oxide layer adjacent to said locally thick portion,

said alignment mark having a slanted side between said locally thick portion and said adjacent portion of said oxide layer, the width of said slanted side being no larger than 1 micron.

4,338,621

HERMETIC INTEGRATED CIRCUIT PACKAGE FOR HIGH DENSITY HIGH POWER APPLICATIONS

Robert E. Braun, Norristown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

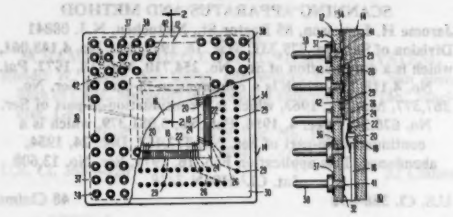
Filed Feb. 4, 1980, Ser. No. 118,496
Int. Cl.³ H01L 23/02, 23/12, 39/02
U.S. Cl. 357—74 8 Claims

1. An hermetic package for an integrated circuit die which has a plurality of wires emanating from its periphery comprising:

a base member having an outer surface and a mounting surface, said base member having an internal recess for mounting said die in proximity to said outer surface, said base member further including a ledge encompassing said die, a plurality of electrically conductive tabs disposed on the surface of said ledge, said plurality of wires of said die being connected to respective ones of said tabs, a plurality of metallized lines each having an extremity connected respectively to one of said tabs and its remaining portion embedded in the material of said base member, said metal-

lized lines lying in a plane substantially coplanar with the surface of said ledge, said mating surface of said base member lying in a plane parallel to but displaced from that of the surface of said ledge, the area of said last mentioned mating surface being substantially equal to that of said outer surface of said base member less the combined areas of the surface of said internal recess for mounting said die and the surface of said ledge, a plurality of metallized vias connecting the opposite extremities of said metallized lines to respective electrically conductive pads on said last mentioned mating surface,

a cover member having an outer surface and a mating surface, said cover member having a plurality of pads on said mating surface, said pads being homologously disposed



with respect to said pads on said mating surface of said base member, a plurality of metallized lines on said mating surface of said cover member each having an extremity connected respectively to a pad on said last mentioned surface, a plurality of metallized vias connecting the opposite extremities of said metallized lines to bosses on said outer surface of said cover member, a plurality of input-/output terminals affixed respectively to said bosses, said plurality of input/output terminals populating substantially the entire outer surface of said cover member, and

means for connecting homologously disposed pads on the mating surfaces of said base and cover members to each other and for sealing said last mentioned surfaces to each other.

4,338,622

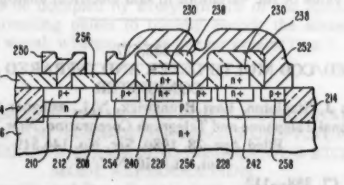
SELF-ALIGNED SEMICONDUCTOR CIRCUITS AND PROCESS THEREFOR

George C. Feth; Tak H. Ning; Denny D. Tang, all of Yorktown Heights; Siegfried K. Wiedmann, Peekskill, and Hwa N. Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,473

Int. Cl.³ H01L *27/02, 29/04*

U.S. Cl. 357—92 **24 Claims**



1. A MTL circuit comprising, in combination:

an injector transistor located in a single crystal semiconductor layer, having collector, base and emitter regions,

at least one logic fan-out transistor located in said semiconductor layer, having collector, base and emitter regions with electrical contacts thereto, wherein the collector region of said injector transistor is electrically connected to the base region of said fan-out transistor and wherein the collector region and its contact of said fan-out transistor are mutually self-aligned with the base region and the contact thereto of said fan-out transistor,

recessed electrical isolation regions in said semiconductor layer abutting said collector region of said fan-out transistor,

a polycrystalline semiconductor layer making electrical contact to the collector regions of said at least one fan-out transistor and located over said single crystal semiconductor layer,

a metal layer located over said polycrystalline semiconductor layer and insulated therefrom for making electrical contact to said base region of said at least one fan-out transistor.

4,338,623

VIDEO CIRCUIT WITH SCREEN-BURN-IN PROTECTION

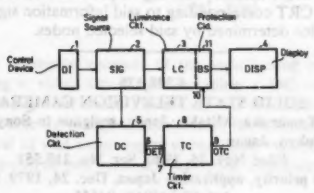
Jean-Pierre Asmus, Marly-le-Roi; Joseph Soto, Montrouge, both of France, and Sebastianus J. Op Het Veld, Henri W. Schneider, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 957,395, Nov. 3, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,079

Claims priority, application France, Oct. 11, 1977, 77 380547; Oct. 4, 1978, 78 28418

Int. Cl.³ H04N *5/22;* H01J *29/52;* A63B *71/00;* G09F *9/32*

U.S. Cl. 358—22 **13 Claims**



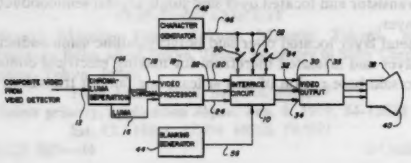
1. A video circuit for generating video signals for displaying pictures on a picture screen, the video circuit comprising a picture signal source for providing picture signals containing visual picture information, means for controlling said picture signal source coupled thereto, at least one luminance circuit coupled to said picture signal source for generating a luminance signal, and a protection circuit coupled to said luminance circuit for protecting the picture screen from burning-in due to a prolonged nonchanging picture, wherein the protection circuit comprises an electric protection switch, having a control input, for suppressing in a switched-off state the luminance signal generated in the video circuit, a detection circuit, having a output, for detecting changes in an electric control signal from said controlling means to the picture signal source, which changes in the control signal would be indicative of active use of said video circuit, and a timer circuit having a start input and an output, the output of the detection circuit being coupled to the start input of the timer circuit, the output of the timer circuit being coupled to the control input of the protection switch, whereby absent an output from said detection circuit, which output would be indicative of active use of said video circuit and which would reset said timer circuit, after a predetermined period of time, said timer circuit causes said protection switch to suppress the luminance signal.

4,338,624

ON SCREEN COLOR DISPLAY

Alain H. d'Hautecourt, Prospect Heights, and George J. Tzakis, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 5, 1981, Ser. No. 222,476
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—22 12 Claims



1. In a color television receiver having means developing red, green and blue video signals at respective circuit terminals in response to a received television signal and output means adapted for processing said video signals for producing a corresponding video image on a color CRT, the improvement comprising:

means operable for developing an information signal;

means operable for developing a blanking signal;

means responsive to said blanking signal for shunting each of said circuit terminals for maintaining the potential thereof at or below the blanking level of said CRT;

means forming a circuit node between each of said circuit terminals and said output means, each of said circuit nodes being adapted for developing a potential above the blanking level of said CRT; and

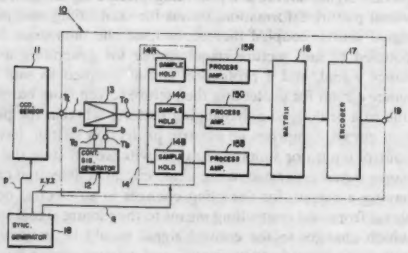
means operable for coupling said information signal to selected ones of said circuit nodes for developing a potential at said selected circuit nodes above the blanking level of said CRT, whereby an image is produced on the screen of said CRT corresponding to said information signal and in a color determined by said selected nodes.

4,338,625

SOLID STATE TELEVISION CAMERA

Seisuke Yamanaka, Mitaka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,551
Claims priority, application Japan, Dec. 24, 1979, 54-167800
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—29 11 Claims



1. A solid state color television camera having a solid state image sensing device from which dots sequential color signals are picked up, which camera comprises:

(a) a gain control signal generator for producing a gain control signal level-set at a predetermined signal level, said signal level being sequentially changed to change the output level of said solid state image sensing device;

(b) a dots sequential gain control amplifier gain-controlled by said gain control signal receiving the output of said image sensing device,

(c) a color signal separator receiving the output of said dot sequential gain control amplifier and having sampling-hold circuits for converting said gain controlled dots sequential color signals into simultaneous color signals; and

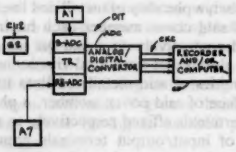
(d) a synchronous signal generator for supplying drive pulses p to said image sensing device, sequential pulses x, y, z to said gain control signal generator and supplying sampling pulses q to said color signal separator and said drive pulses p sequential pulses x, y and z and sampling pulses q synchronized with each other.

4,338,626

SCANNING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08841

Division of Ser. No. 778,331, Mar. 16, 1977, Pat. No. 4,148,061, which is a continuation of Ser. No. 254,710, May 18, 1972, Pat. No. 4,118,730, which is a continuation-in-part of Ser. No. 267,377, Mar. 11, 1963, which is a continuation-in-part of Ser. No. 626,211, Dec. 4, 1956, Pat. No. 3,081,379, which is a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Feb. 16, 1979, Ser. No. 13,608
Int. Cl.[3] H04N 7/18
U.S. Cl. 358—93 48 Claims



1. An apparatus for analyzing time variable electrical signals comprising:

(a) first means for generating a time variable electrical analog signal,

(b) second means for receiving and analyzing said analog signal,

(c) said second means including means for separating those portions of the analog signal having characteristics varying beyond a predetermined minimum value and for selectively gating said separate signal portions to said receiving and analyzing means,

(d) said analyzing means including means responsive to variations in said separated signal portions for digitizing same, and

(e) said digitizing means including means for generating a plurality of digital code signals which are indicative of the value of the variations in said electrical analog signal.

4,338,627

LED/CCD MULTIPLEXER AND INFRARED IMAGE CONVERTER

John J. Stapleton, East Brunswick, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

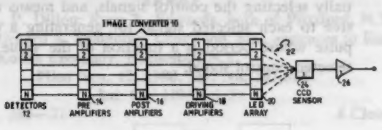
Filed Apr. 28, 1980, Ser. No. 144,519
Int. Cl.[3] H04N 7/18
U.S. Cl. 358—113 19 Claims

1. A device for irradiation detection and image conversion which comprises:

at least one irradiation detector means capable of providing an output in the presence of said irradiation with said output proportional to the level of said irradiation;

at least one light emitting means coupled to a respective detector means and adapted to emit a signal responsive to the output of said detector means;

at least one optical fiber for each respective emitting means coupled to said emitting means at one end;
sensor coupled to said fiber at its other end; and



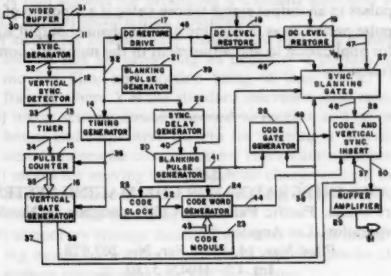
said sensor being capable of receiving and storing as data the signal received from each emitting means and provide an output therefrom at predetermined intervals which may be used for image reconstruction.

4,338,628

SCRAMBLED VIDEO COMMUNICATION SYSTEM

Robert W. Payne, San Diego, and Wesley F. Smith, San Jose, both of Calif., assignors to Dynacom International, Inc., Marietta, Ga.

Filed Dec. 19, 1979, Ser. No. 105,127
Int. Cl.³ H04N 7/16
U.S. Cl. 358—120 **32 Claims**



10. An encoder for a television communication system wherein a composite video signal is scrambled to prevent a stabilized picture from being displayed by a typical broadcast television set receiving the scrambled video signal, comprising
means for offsetting the DC level of the reference color burst information in a composite video signal to a point nearly midway between the reference black and white levels of the video information; and for removing horizontal synchronizing pulses from the composite video signal to provide a scrambled video signal;
a code word generator for generating a code word; and
an insert circuit for inserting the code word in the scrambled video signal in regularly spaced positions that normally would be occupied by every nth one of the horizontal synchronizing pulses to thereby encode the scrambled video signal; wherein n is an integer greater than 1.

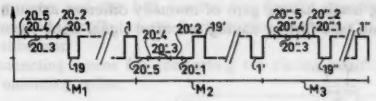
4,338,629

PROCESS AND APPARATUS FOR CODING BINARY SIGNALS FOR NUMBERING IMAGES OR PICTURES STORED ON A RECORDING MEDIUM FOR STOP MODE REPRODUCTION

Pierre Oprandis, and Rene Romeas, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 8, 1980, Ser. No. 147,958
Claims priority, application France, May 10, 1979, 79 11853
Int. Cl.³ H04N 5/76
U.S. Cl. 358—128.5 **10 Claims**

1. A process for coding binary image numbering signals to be stored on a recording medium, said binary signals being in the form of a serial bit train, wherein the binary signals are protected against variations encountered during the transcription process by repeating a number of times the lowest weight



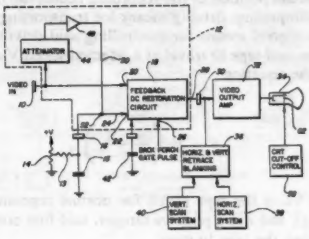
bit of said serial bit train and retransmitting the redundant serial bit train obtained in this way on a number of occasions, the bits of one part of said redundant trains also being inverted.

4,338,630

ONE-CHIP CHROMA/LUMA IC: D.C. COUPLING REDUCTION CIRCUIT

Christopher M. Engel, Arlington Heights, and George J. Tzakis, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 15, 1980, Ser. No. 216,451
Int. Cl.³ H04N 5/18
U.S. Cl. 358—172 **8 Claims**



1. In a television receiver of the type having means for developing a video signal and including a DC restoration circuit having a reference input, said DC restoration circuit being operable for clamping a portion of the horizontal blanking interval of said video signal to the direct current voltage level presented to said reference input, the improvement comprising:
means for developing a dynamic adjustment signal representing a selected percentage of said video signal;
viewer operable means for developing a selected direct current black level reference signal; and
means combining the direct current level of said dynamic adjustment signal with said direct current black level reference signal and coupling the resulting combined direct current signal to the reference input of said DC restoration circuit, whereby the DC coupling of said DC restoration circuit is reduced in accordance with said selected percentage.

4,338,631

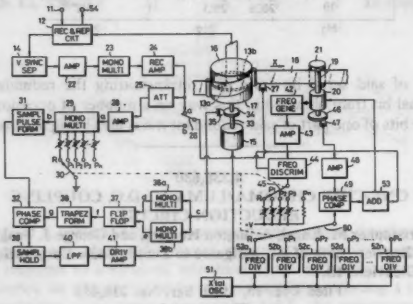
VIDEO SIGNAL, SPEED-CHANGE REPRODUCING SYSTEM

Yoshihiko Ota, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 891,409, Mar. 29, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,537
Claims priority, application Japan, Mar. 30, 1977, 53-15601
Int. Cl.³ G11B 15/46
U.S. Cl. 358—127 **6 Claims**

1. A video signal, speed-change reproducing system for reproducing video signals which are recorded on a tape, said signals being recorded by a pair of rotary recording heads

alternately contacting said tape, said heads being mounted on diametrically opposed sides of a rotating member, said video signals being recorded on contiguous video tracks disposed obliquely relative to the tape longitudinal direction, said recording heads having gaps of mutually different azimuth angles, said tape further having a control signal track recorded



along a transverse edge, said control signals corresponding to the rotational position of the recording heads, the reproducing system comprising: driving means for transporting said tape;

a first control means for controlling said driving means to cause said tape to travel at a selected speed V represented by the equation

$$V = Vo\left(\frac{n \pm 2}{n}\right),$$

wherein Vo is the tape speed for normal reproduction (and recording), and n is a positive integer, said first control means also causing the tape to stop;

means comprising a rotational member having a pair of reproducing heads mounted on diametrically opposed sides thereof, said reproducing heads having gaps of mutually different azimuth angles which are the same as said azimuth angles of the recording heads, said reproducing heads successively scanning said video tracks on the tape to reproduce said recorded video signal;

a fixed head for picking up the control signal from said edge track; and

a second control means for controlling both the relative phases of the rotational member having said reproducing head thereon, and the tape travel so that said rotational phase of the rotating member is maintained in a predetermined phase relationship with respect to the picked up control signal, said predetermined phase being such that each time instant when the level of the reproduced signal becomes a minimum value falls within or in the vicinity of a vertical blanking period.

4,338,632

REMOTE CONTROL SYSTEM FOR TELEVISION MONITORS

Scott L. Falater, Brookfield, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

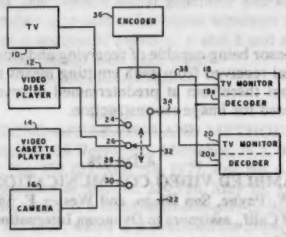
Filed Oct. 6, 1980, Ser. No. 194,163
Int. Cl.³ H04N 5/44
U.S. Cl. 358—194.1 **21 Claims**

1. A system for remotely adjusting the control functions of at least one television monitor, comprising:

an encoder for generating a repetitive multi-channel signal whose period is substantially constant, each channel including a control pulse having a variable pulse period, said encoder including:

user-operable controls which are adapted to generate a plurality of user-variable control signals, a counter for generating sequentially occurring output pulses,

switch means responsive to said output pulses for sequentially selecting the control signals, and means responsive to each selected signal for generating a control pulse whose period is a function of the value of the selected control signal;



a transmission path for coupling the multi-channel signal to a decoder; and

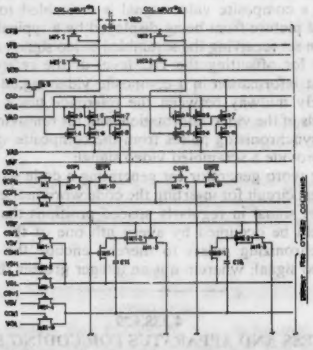
a decoder associated with the monitor and receiving the multi-channel signal for converting each of said control pulses to an output signal whose value is a function of said pulse period so as to develop a multi-channel output signal for application to and adjustment of the monitor's control functions.

4,338,633

FRAME INTEGRATOR FOR CID IMAGING SYSTEM

Robert Malm, Pacific Palisades, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Nov. 14, 1980, Ser. No. 207,478
Int. Cl.³ H04N 5/30
U.S. Cl. 358—213 **3 Claims**



1. A device for improving the sensitivity of an element of a two-dimensional array of radiation detectors comprising:

(a) sampling and dumping means for sampling the output of the element and dumping the accumulated charge from the element after each sampling of the output, which means uses the charge injection device technique,

(b) integrating means, responsive to the sampled output of the element, for integrating the sampled outputs,

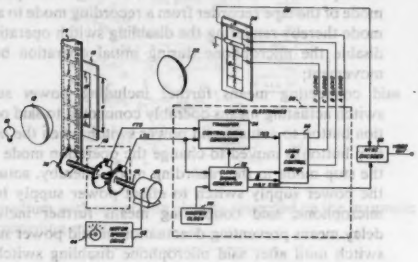
(c) readout means for periodically reading out the output of the integrating means and resetting the output of the integrating means to "zero".

4,338,634

FRAME-RATE CONVERTING FILM SCANNER WITH TWO-DIMENSIONAL SOLID STATE IMAGE SENSING ARRAY

Peter L. P. Dillon; Evan A. Edwards, both of Pittsford, N.Y., and Richard A. Spaulding, Longwood, Fla., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,813
Int. Cl.³ H04N *3/36*
U.S. Cl. 358—214 4 Claims



1. A film scanner for producing a standard television signal from a motion picture film, comprising:

(a) means for continuously moving the film at X frames per second and for projecting an image of a portion of the moving film, said portion being at least 2+X/Y film frames, where Y is the standard television field rate;

(b) image sensing means disposed to receive said projected image and responsive thereto for forming a two-dimensional imagewise charge pattern representative thereof;

(c) means for moving said imagewise charge pattern during formation thereof in said image sensing means to track the motion of the film image;

(d) temporary storage means, connected to said image sensing means for storing a portion of said imagewise charge pattern representing one full film frame;

(e) means for moving a portion of said imagewise charge pattern representing one full film frame from said image sensing means into said temporary storage means; and

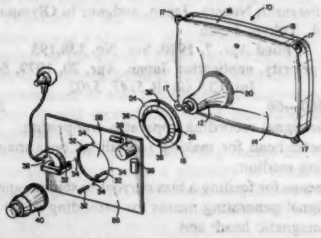
(f) means for reading said portion of said imagewise charge pattern out of said temporary storage means at a standard video rate for producing a standard video signal.

4,338,635

CATHODE RAY TUBE MONITOR

Francis J. Haider, Circle Pines, and Allen R. Kent, Arden Hills, both of Minn., assignors to Audiotronics Video Display Division, Inc., New Brighton, Minn.

Filed Jun. 3, 1980, Ser. No. 155,938
Int. Cl.³ H04N *5/64*
U.S. Cl. 358—254 23 Claims



1. Mounting apparatus for mounting a circuit board to a cathode ray tube having a front face and a back surface with a bell portion and a neck portion, the mounting apparatus comprising:

a mounting collar;

attaching means proximate a transition between the neck portion and the bell portion for fixedly attaching the mounting collar to the back surface of the cathode ray tube; and

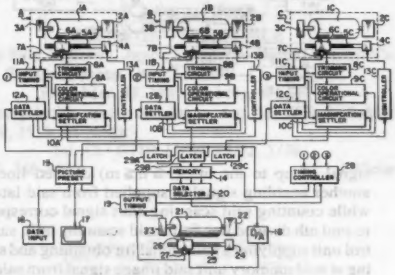
connecting means for connecting the circuit board to the mounting collar.

4,338,636

METHOD FOR REPRODUCING PICTURES FROM ORIGINAL PICTURES DEPENDING ON THE DESIRED LAYOUT

Mitsuhiko Yamada, 6 Goto-cho, Ogurusu-minami, Fushimi-ku, Kyoto, and Toshiaki Nakade, 19 Doinouchi-cho, Mibu, Nakagyo-ku, Kyoto, both of Japan

Filed Aug. 6, 1980, Ser. No. 175,836
Claims priority, application Japan, Aug. 16, 1979, 54-103514
Int. Cl.³ H04N *1/00*
U.S. Cl. 358—256 5 Claims



1. A method for reproducing pictures on a photosensitive material from original pictures depending on the desired layout, comprising the steps of:

(a) scanning a plurality of original pictures in parallel by means of picture scanning means to obtain rows of picture signals;

(b) aligning the picture signals in series depending on the desired layout; and

(c) recording reproduction pictures on a photosensitive material in the desired layout positions by the picture signals aligned by means of a picture recording means.

4,338,637

VARIABLE SCANNING DEVICE

Seizou Ueno, Hino, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 21, 1980, Ser. No. 199,339
Claims priority, application Japan, Oct. 25, 1979, 54-137002
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—288 4 Claims

1. A variable scanning device comprising:

a scanning unit which divides one image line of an image surface to be transmitted into m ($2 \leqq m$) divided lines at maximum, scanning the divided lines and supplies a scanning pulse signal controlling the scanning, a scanning start signal indicating the start of scanning obtained in synchronism with said scanning pulse signal, and a scanning output signal obtained in synchronism with said scanning pulse signal, said scanning unit transmitting said image surface by one image line to be transmitted by inputting a subscanning signal;

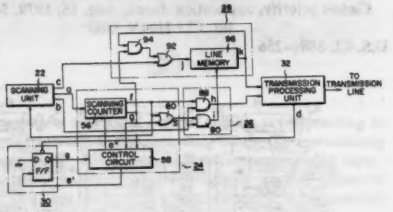
a memory unit connected to said scanning unit, which obtains an image signal from said scanning output signal supplied from said scanning unit for storing it in response

to a write and read pulse signal and which transmits said image signal of one image line to be transmitted already stored therein;

a transmission processing unit connected to said memory unit, which reads and encodes said image signal supplied from said memory unit for supplying it to a transmission line and which supplies an image signal output request signal;

a latch unit connected to said transmission processing unit, to which is input said image signal output request signal supplied from said transmission processing unit for supplying an enabling signal;

a control unit connected to said latch unit and said scanning unit, which is rendered operative by said enabling signal supplied from said latch unit for counting scanning start signals supplied from said scanning unit, said control unit supplying a gate signal for obtaining and supplying at said memory unit said image signal from said scanning output



signal of up to the nth ($1 \leq n \leq m$) divided line when another enabling signal is supplied from said latch unit while counting said scanning start signal corresponding to said nth divided line from said scanning unit, said control unit supplying a gate signal for obtaining and supplying at said memory unit said image signal from said scanning output signal up to the $(n+1)$th divided line when another enabling signal is supplied from said latch unit while counting said scanning start signal corresponding to said $(n+1)$th divided line from said scanning unit, said control unit also supplying subscanning signal; and

a timing signal generating unit connected to said control unit, said scanning unit, said memory unit, and said transmission processing unit, which obtains a read pulse signal and a write and read signal from said scanning pulse signal supplied from said scanning unit and said gate signal supplied from said control unit for supplying said read pulse signal to said transmission processing unit and said write and read pulse signal to said memory unit.

4,338,638

TAPE RECORDER

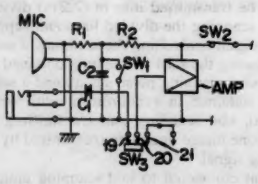
Shunichi Orita, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1979, Ser. No. 101,255

Claims priority, application Japan, Dec. 27, 1978, 53-180331[U]

Int. Cl.³ G11B 15/04

U.S. Cl. 360—60 **2 Claims**



1. A tape recorder comprising:

a built-in microphone;

a power supply circuit for said microphone, a power supply switch in said power supply circuit;

a microphone disabling switch provided in said circuit for disabling said microphone;

an operation button;

connecting means including microphone disabling switch actuating means operably connected to said operation button to actuate said microphone disabling switch at an initial state of movement of the operation button when said operation button is moved to change the operation mode of the tape recorder from a recording mode to a stop mode thereby rendering the disabling switch operative to disable the microphone during initial operation button movement;

said connecting means further including power supply switch actuating means operably connected to said operation button to actuate said power switch when the operation button is moved to change the operation mode from the stop mode to the recording mode, thereby, actuating the power supply switch to effect power supply to the microphone, said connecting means further including delay means preventing deactuation of said power supply switch until after said microphone disabling switch has been actuated by said microphone switch actuating means, said delay means preventing deactuation of said power supply switch until the operation button has reached a terminal state of movement thereof, said delay means further including means for delaying deactuation of said microphone disabling switch until the operation button has reached a terminal state of movement thereof during a change in operation mode of the tape recorder from a stop mode to a recording mode, both said power supply switch and said microphone disabling switch being in operation at the same time between said initial and terminal states of movement of said operation button so that said microphone is always disabled during movement of the operation button between said initial and terminal states of movement thereof; and

means in said connecting means for maintaining said microphone disabling switch actuated whenever said power supply switch is deactuated, thereby maintaining said microphone disabled whenever power to the microphone is shut off by the operation button.

4,338,639

CUE SIGNAL RECORDING APPARATUS

Kenji Fujibayashi, Nogata, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 138,195

Claims priority, application Japan, Apr. 20, 1979, 54-48698

Int. Cl.³ G11B 5/47, 5/02

U.S. Cl. 360—66 **27 Claims**

1. A cue signal recording apparatus comprising:

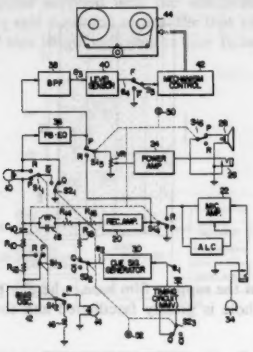
a magnetic head for making recordings on a magnetic recording medium;

a bias means for feeding a bias current to said magnetic head;

a cue signal generating means for providing a cue signal to said magnetic head; and

means responsive to operation of said cue signal generating means for weakening a recording bias magnetic field

caused by said bias current when said cue signal is recorded by said magnetic head on the magnetic recording



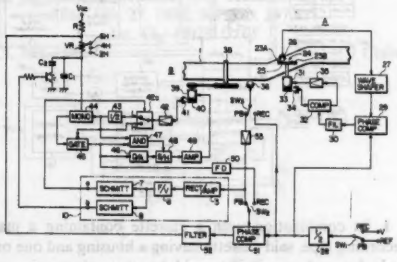
medium with something already recorded on the magnetic recording medium.

4,338,640

SPEED CONTROL SYSTEM FOR A MULTIPLE SPEED TAPE RECORDING AND REPRODUCING APPARATUS

Toshiomi Yabu; Tatsuo Wada; Masaru Hashirano, and Kouichi Yamada, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 15, 1980, Ser. No. 122,102
Claims priority, application Japan, Feb. 19, 1979, 54/18177
Int. Cl.³ G11B *15/46, 19/28*
U.S. Cl. 360—73 **6 Claims**



1. In a tape recording and reproducing apparatus including means for driving the tape at one of at least three predetermined speeds during recording and playback modes and means for recording a reference speed indicative signal in said tape during the recording mode, and means for generating a capstan speed indicative signal, a speed control system comprising:

a transducer for reproducing said reference speed indicative signal from said tape during the playback mode, whereby the frequency of the reproduced speed indicative signal assumes one of a plurality of discrete values depending on deviation of the speed of said tape from the speed with which said reference speed signal is recorded in said tape;

means connected to said transducer for converting the frequency of said reproduced speed indicative signal to a voltage signal;

means connected to said converting means for comparing said voltage signal with a plurality of reference values representing different frequencies to generate a first speed control signal indicative of the deviation of the tape speed from said reference values; and

means responsive to said first speed control signal and to said capstan speed indicative signal for generating a second speed control signal indicative of the difference therebetween for controlling the capstan

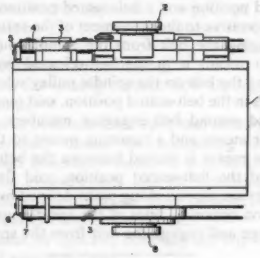
wherein said predetermined speeds have ratios of 1:2:3, and wherein said comparing means comprises means for establishing first, second and third reference voltages to define a set of first, second, third and fourth voltage ranges, said third voltage range including a predetermined voltage which is derived when the playback tape speed equals the recording tape speed, and means for generating low-speed, medium-speed and high-speed control signals for application to said second speed control signal generating means when said voltage signal corresponds to said first, second and fourth voltage ranges, respectively.

4,338,641

MAGNETIC TAPE DEVICE

Hiroshi Sato, Fujisawa, Japan, assignor to Daiichi Electric Co., Ltd., Fujisawa, Japan

Filed Mar. 18, 1980, Ser. No. 131,681
Claims priority, application Japan, Apr. 13, 1979, 54-045840; May 29, 1979, 54-065587
Int. Cl.³ G11B *15/60, 15/32, 5/78*
U.S. Cl. 360—90 **2 Claims**



1. An underwater magnetic device, comprising:

(a) a first and a second shaft;

(b) a supply reel connected to said first shaft;

(c) a first pulley substantially coplanar with said supply reel;

(d) a second pulley rotatable about an axis whose said axis is at a substantially 90° angle relative to the axis of said first shaft;

(e) a third pulley rotatable about an axis whose said axis is substantially parallel with the axis of the second pulley;

(f) a fourth pulley rotatable about an axis whose said axis is at a substantially 90° angle relative to the axis of said second and third pulleys;

(g) a take-up reel connected to said second shaft, said take-up reel being substantially coplanar with said fourth pulley; and

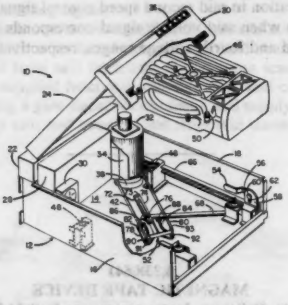
(h) a tape which is connected to said supply reel and said take-up reel, whereby the first pulley is connected to said tape between said supply reel and the second pulley, the second pulley is connected to the tape between the first pulley and the third pulley, the third pulley is connected to the tape between the second pulley and the fourth pulley, and the fourth pulley is connected to the tape between the third pulley and the take-up reel.

4,338,642

DRIVE BELT RELEASE MECHANISM FOR MAGNETIC DISK DRIVES

Allen Clark, and Michael V. Konshak, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 2, 1980, Ser. No. 136,541
Int. Cl.[3] G11B *17/00, 5/012, 25/04*
U.S. Cl. 360—97 8 Claims



1. In a disk drive in which a rotatable disk is housed in a disk housing assembly having a drive spindle pulley projecting therefrom, the disk drive including a drive motor and a drive belt, the drive belt engaging the drive motor and the spindle pulley to facilitate the rotation of the disk by the motor, a release mechanism comprising:

actuator means movable by an operator between a belt-released position and a belt-seated position, and

means responsive to the movement of the actuator means for disengaging the belt from the spindle pulley when the actuator means is in the belt-released position and for engaging the belt on the spindle pulley when the actuator means is in the belt-seated position, said means comprising first and second belt-engaging members engaging said actuator means and a camming means so that, when said actuator means is moved between the belt-released position and the belt-seated position, said first and second members are moved along paths defined by said camming means on opposing sides of the spindle pulley to wholly disengage and engage the belt from the spindle pulley.

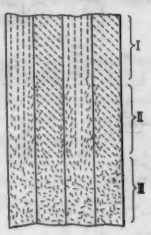
4,338,643

MAGNETIC RECORDING DISC AND METHOD OF MAKING SAME

Eiichi Tadokoro, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 6,169, Jan. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 838,499, Oct. 3, 1977, abandoned. This application Apr. 8, 1980, Ser. No. 138,368
Claims priority, application Japan, Nov. 16, 1976, 51-137502
Int. Cl.[3] G11B *5/82*
U.S. Cl. 360—135 10 Claims

1. A method of producing a magnetic recording disc comprising applying a magnetic layer containing magnetic particles on a support film base, orienting the magnetic particles in a number of first strip-like zones in a first direction and in a number of second strip-like zones in a second direction inclined with respect to the first direction at an angle of 60° to 120°, said first and second strip-like zones being alternately and contiguously arranged in parallel to each other, the width of each said first and second strip-like zones being not more than 5 mm and the ratio of the width of the first strip-like zone to that of the second strip-like zone being within the range of 1:3 to 3:1, solidifying the magnetic layer after the magnetic particles in said first strip-like zones, causing interaction along the boundaries between adjacent strip-like zones resulting in a random particle orientation and then stamping out a magnetic recording disc from the support film base, whereby positioning of a disc center hole is greatly fascilitated and the output is enhenced.

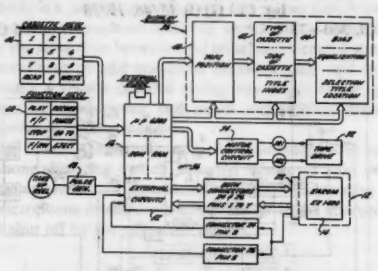


4,338,644

MAGNETIC TAPE CASSETTES PROVIDED WITH MEMORY CIRCUITS FOR STORING INFORMATION

Theophiel C. J. L. Staar, Brussels, Belgium, assignor to Staar S. A., Belgium

Filed Oct. 22, 1979, Ser. No. 87,691
Claims priority, application Belgium, Oct. 27, 1978, 871596; Oct. 31, 1978, 871690
Int. Cl.[3] G11B *27/24*
U.S. Cl. 360—132 32 Claims



1. In combination with a cassette containing a magnetic recording tape, said cassette having a housing and one or more reels for said tape within said housing, electronic memory means carried by said housing having terminals adapted to engage and establish electrical connection to terminals of a peripheral device, said memory means including semi-conductor memory circuits for representing by the state of said circuits, information as to the cassette or tape contained therein and readable from said peripheral device via said terminals.

4,338,645

TAPE RUNNING TIME INDICATION SYSTEM

Katsuo Mohri, Yokosuka, and Yoshinori Okada, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

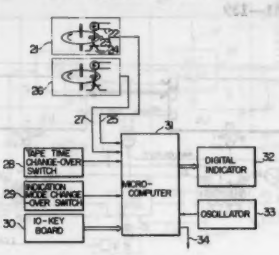
Filed Nov. 2, 1979, Ser. No. 90,610
Claims priority, application Japan, Nov. 6, 1978, 53-135849; Nov. 6, 1978, 53-135853; Nov. 6, 1978, 53-135854
Int. Cl.[3] G06F *15/20*
U.S. Cl. 360—137 8 Claims

1. A tape running time indication system for a magnetic recording-reproduction apparatus using a magnetic tape and including a supply reel and a take-up reel, comprising:

means for detecting an angular velocity ω_1 of said supply reel;

means for detecting an angular velocity ω_2 of said take-up reel;

a microcomputer supplied with the velocities ω_1 and ω_2 detected by said detecting means, the tape running speed v, the total tape length indicated as time T_0 corresponding



to the total tape length and the hub radius R of each reel, said microcomputer calculating at least one of a remaining tape length T_1 indicated as time and a taken-up tape length T_2 indicated as time; and

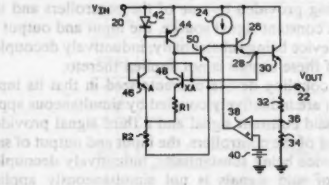
means for indicating a length of time obtained from the result of said calculation.

4,338,646

CURRENT LIMITING CIRCUIT

William F. Davis, Tempe, and Robert N. Dotson, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1981, Ser. No. 257,837
Int. Cl.³ H02H *3/08*
U.S. Cl. 361—18 **7 Claims**



1. A circuit for monitoring the base-emitter voltage of a transistor for limiting the current therethrough, comprising:

a first transistor having base, emitter and collector terminals;

a first source of current coupled to said first transistor for supplying base drive to said first transistor;

a second transistor having a collector for conducting a first current, a base coupled to the base of said first transistor, and an emitter having a first area;

a third transistor having a collector for conducting a second current, a base coupled to the base of said first transistor, and an emitter having a second area, said first area being substantially larger than said second area;

impedance means coupled between the emitters of said second and third transistors and the emitter of said first transistor, said impedance means and said first and second areas causing said first and second currents to be substantially equal at a predetermined value of the base-emitter voltage of said first transistor; and

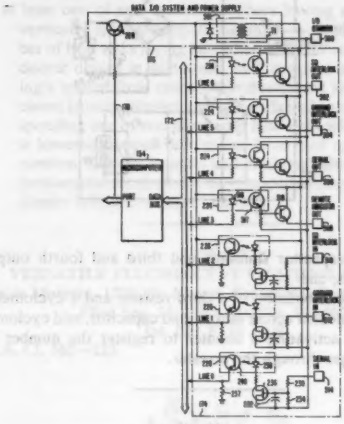
means for reducing the base drive to said first transistor when said first current is substantially equal to said second current.

4,338,647

CIRCUIT INTERRUPTER WITH DIGITAL TRIP UNIT AND OPTICALLY-COUPLED DATA INPUT/OUTPUT SYSTEM

John T. Wilson; John A. Wafer, both of Beaver; Joseph C. Engel, and Robert T. Elms, both of Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1980, Ser. No. 140,627
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—96 **10 Claims**



10. Circuit interrupter apparatus, comprising:

interrupter means for conducting current flow through an associated circuit and for operating to interrupt current flow therethrough on command;

sensing means for sensing current flow through said interrupter means;

trip unit means connected between said sensing means and said interrupter means for comparing current flow through said interrupter means to a predetermined time-current trip characteristic and for operating said interrupter means when current flow therethrough exceeds said time-current trip characteristic;

interface means for optically coupling said trip unit means to associated apparatus; and

pulse power supply means connected to said interface means for supplying pulses of operating power thereto sufficient to achieve the desired operation thereof.

4,338,648

GAPLESS DISCHARGE COUNTER FOR LIGHTNING ARRESTERS

Thallam Subbarao, Castleton, N.Y., assignor to General Electric Company, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,767
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—127 **1 Claim**

1. A discharge counter and leakage current meter circuit for a voltage surge arrester, said circuit comprising, in combination;

a zinc oxide varistor directly connecting the voltage surge arrester to ground;

a first rectifying bridge having first and second input terminals and first and second output terminals;

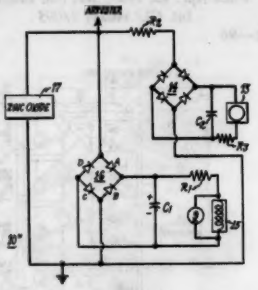
a first resistor connecting said first input terminal to the junction between the arrester and said varistor, said second input terminal connected directly to ground;

a first capacitor shunting said first and second output terminals;

the series combination of a second resistor and an ammeter

connected across said first capacitor, said ammeter reading leakage current through the arrester;

a second rectifying bridge having a third input terminal directly connected to the junction between the arrester and said varistor, a fourth input terminal directly connected to ground, and third and fourth output terminals;



a second capacitor shunting said third and fourth output terminals; and

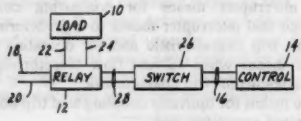
the series combination of a third resistor and a cyclometer coil connected across said second capacitor, said cyclometer coil activating a counter to register the number of discharges through the arrester.

4,338,649

SYSTEM FOR REMOTELY CONTROLLING A LOAD

Douglas R. Mosier, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 29, 1980, Ser. No. 201,742
Int. Cl.³ H01H 47/22
U.S. Cl. 361—139 42 Claims



1. A system for controlling a transformer relay in response to a stimulus, said transformer relay having a primary winding coupled to an energy source, having a load switch adapted to control the application of said energy source to a load, and having a secondary winding which controls said load switch depending upon the unidirectional flow of current above a predetermined threshold in said secondary winding, comprising:

a switching means coupled to said secondary winding with two wires for allowing, in response to a control signal, a unidirectional current flow in said secondary winding of an amount exceeding said threshold in said secondary winding; and

a control means operatively coupled to said switching means for momentarily producing said control signal in response to said stimulus;

said switching means and said control means being powered from said secondary winding, drawing a quiescent current of an amount less than said threshold from said secondary winding;

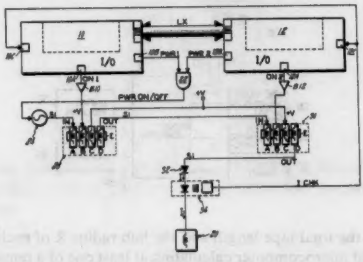
whereby said transformer relay is controlled utilizing only two wires between said secondary winding and said switching means and whereby said control signal may be a signal other than a unidirectional current flow.

4,338,650

FAIL-SAFE RELAY DRIVING

Gilbert W. Wierschke, Englewood, Colo., assignor to Otis Elevator Company, Farmington, Conn.

Filed Nov. 10, 1980, Ser. No. 205,830
Int. Cl.³ H01H 47/22
U.S. Cl. 361—139 4 Claims



1. An apparatus comprising:

at least two controllers,

a control device to which power is provided,

a power source for generating said power,

first means for coupling said power source to said device, said means operating under the control of said controllers, characterized in that:

said power source provides alternating output voltages in response to concurrent control signals from the controllers,

said power coupling means comprises: a first coupling device which receives the output from said power source and a second coupling device which receives the output from said first coupling device and provides an output to power the control device,

said first coupling device characterized in that its input and output are inductively coupled when a first and second signal are simultaneously applied thereto, one of said signals being provided by one of the controllers and the other by a constant signal source, the input and output of said first device being substantially, inductively decoupled if either of these signals is not applied thereto,

said second coupling device characterized in that its input and output are inductively coupled by simultaneous application of said constant signal and a third signal provided by a second of the controllers, the input and output of said second device being substantially, inductively decoupled if either of said signals is not simultaneously applied thereto.

4,338,651

DUAL COIL DRIVER

Robert S. Henrich, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 1, 1980, Ser. No. 193,333
Int. Cl.³ H01H 47/04
U.S. Cl. 361—154 22 Claims

1. A driver circuit for a fuel injector, the driver circuit adapted to be connected to a voltage source and to receive input metering signals from an electronic control unit, for controlling the operation of a solenoid of the type having a plurality of coils situated so as to produce, when activated, aiding magnetic fields, the driver circuit comprising:

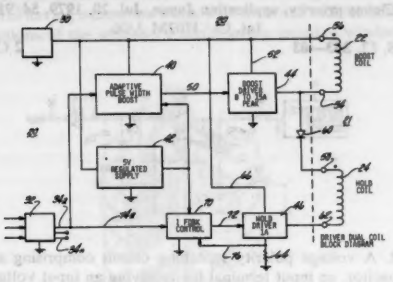
voltage regulator means connected to said voltage source for generating a regulated voltage;

adaptive means, responsive to the metering signals for generating a pulse width boost signal that is variable in correspondence with fluctuations of the voltage level of said voltage source;

first driver means, responsive to said boost signal, and con-

nected to the first of said coils for causing current to flow therethrough;

second driver means, responsive to said boost signal, and connected to the second of said coils for activating said



second coil and for causing the current flowing through said first coil to flow through said second coil; and

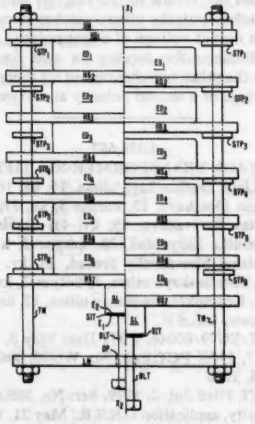
first means connected to said first or said second driver means for reducing current droop upon activation of said second coil.

4,338,652

STACK MODULE AND STACK LOADER THEREFOR

Walter N. Romanczuk, Buffalo; Paul J. Reiter, West Seneca, and William R. Watkins, Colden, all of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 124,689, Feb. 26, 1980, abandoned.
This application Jul. 16, 1981, Ser. No. 283,707
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—388 **2 Claims**



1. In a frame assembly holding together under pressure along a longitudinal axis a stack of electrical components including a plurality of semiconductor devices and of heat sinks arranged in pairs so that two heat sinks per semiconductor device are adjacent opposite sides thereof, the combination of:

an upper end member disposed transversely of said longitudinal axis above said stack;

a base plate normally in engagement with the lower end of said stack;

a lower end member disposed transversely of said longitudinal axis below said stack and said base plate;

said lower end member having a threaded central opening aligned with said longitudinal axis;

bolt means operatively mounted through said threaded central opening of said lower end member and engaging said base plate for applying pressure to said stack therethrough and against said upper end member;

tension members mounted laterally of said stack and connecting said upper and lower end members;

said bolt means being adjustable between an upper extreme position for which said stack is under pressure and a withdrawn extreme position away from said upper extreme position, said stack being lowered under gravity when said bolt means is moved from said upper to said withdrawn extreme position;

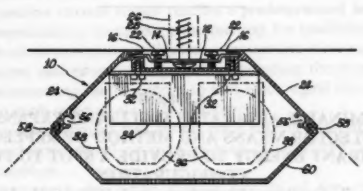
at least one of said tension members having a plurality of vertically spaced stoppers matching in number the number of heat sinks laying immediately above each semi-conductor device in said stack, said stoppers being increasingly spaced from one another downward along the associated tension member and being adapted to retain a corresponding one of said number of heat sinks when said stack is lowered by said bolt means from said upper extreme position, thereby to open said stack and allow a selected semi-conductor device to be removed and replaced immediately below a retained heat sink.

4,338,653

VERSATILE FLUORESCENT LIGHTING FIXTURE

Louis Marrero, 1209 Via Ramon, Escondido, Calif. 92025

Filed Sep. 24, 1980, Ser. No. 190,466
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—223 **7 Claims**



1. A fluorescent light fixture comprising:

(a) an elongated housing;

(b) means on the back of said housing for mounting same; and

(c) universal mounting means defined in the front of said housing and extending the substantial length thereof for alternatively or collectively mounting fluorescent sockets, a frontal reflector assembly, and transformer/ballast, said universal mounting means comprising a pair of parallel forward facing slots defined in said housing and extending the substantial length of same, and said sockets, reflector assembly, and transformer each defines at least one mounting panel mountable by means of screws engageable in said slots to capture said panels by the opposite edges thereof.

4,338,654

VARIABLE SPOT STAGE LIGHT

Richard Logothetis, 631 Johnson Ave., Bohemia, N.Y. 11716

Filed Sep. 20, 1980, Ser. No. 183,058
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—268 **2 Claims**

1. A stage light comprising:

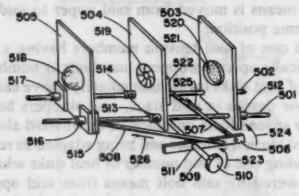
(a) a frame, having a forward direction towards which the light is to be beamed, and a reward direction opposite the forward direction,

(b) an incandescent lamp movably mounted within the frame and located towards the rear of the frame,

(c) a reflector placed adjacent and to the rear of the lamp and on the same movable mounting as the lamp having

general hemispherical coverage of the lamp generally parabolic contours to capture and beam the light from the rear of the lamp in the forward direction,

(d) a variable aperture iris fixedly mounted to the frame and positioned forward of the lamp to control the amout of light from the lamp and reflector passed in the forward direction by means of varying the aperture size,



(e) an objective lens system located forward of the iris to accept and focus the light passed through the iris, and

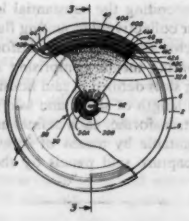
(f) means for linking the lamp and reflector on the movable mounting to the iris to automatically adjust the iris aperture with the movement of the lamp and reflector for maximum forward light transmission with each setting of the lamp and reflector position.

4,338,655

LUMINAIRE APPARATUS INCLUDING EXPANSIBLE REFLECTOR MEANS AND METHOD OF REFLECTING RADIANT ENERGY TO PROVIDE A SPOT TO FLOOD CONFIGURATION

John E. Gulliksen, Shrewsbury, and William H. Hamilton, Lincoln, both of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Filed Oct. 20, 1980, Ser. No. 198,660
Int. Cl.³ F21V 7/16, 7/02
U.S. Cl. 362—281 24 Claims



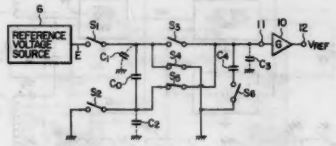
1. In a method of reflecting radiant energy in which a light source is received in a housing body and radiant energy from the light source is reflected from a stationary reflector surface through a light transmitting member on the housing to provide a desired configuration of the said reflected radiant energy the steps which include interposing expansible reflector means between the stationary reflector surface and the light transmitting member, and rotating the light transmitting member to progressively extend the expansible reflector means around the light source thereby changing the angles of reflection of a portion of the reflected radiant energy thus producing a different configuration of emitted radiation.

4,338,656

VOLTAGE POLARITY SWITCHING CIRCUIT

Kazuo Yamakido, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,334
Claims priority, application Japan, Jul. 20, 1979, 54/91567
Int. Cl.³ H02M 3/06
U.S. Cl. 363—63 2 Claims



1. A voltage polarity switching circuit comprising a first capacitor, an input terminal for receiving an input voltage to charge said first capacitor, an output terminal for delivering an output voltage, a first switch interposed between one end of said first capacitor and said input terminal, a second switch interposed between the other end of said first capacitor and ground and a switching circuit fo selectively inverting the voltage charge on said first capacitor and providing it to said output terminal, characterized in that said switching circuit comprises a third switch interposed between said one end of said first capacitor and said output terminal, a fourth switch interposed between said one end of said first capacitor and ground, a fifth switch interposed between the said other end of said first capacitor and said output terminal, a second capacitor having its one end connected to said output terminal and a sixth switch interposed between the other end of said second capacitor and ground, and means for controlling said switches including means for charging said first capacitor by turning on said first, second, fifth and sixth switches with the other switches turned off, means for turning on said second, third and sixth switches with the other switches turned off thereby to produce an output voltage of a first polarity at said output terminal, and means for turning on said fourth and fifth switches with the other switches turned off thereby to produce an output voltage of a second polarity at said output terminal.

4,338,657

HIGH-VOLTAGE TRANSFORMER-RECTIFIER DEVICE

Vladimir N. Lisin, Dushinskaya ulitsa, 14, kv. 106; Mikhail V. Pavlov, ulitsa Flotskaya, 13, korpus 5, kv. 77; Jury V. Laschenov, ulitsa Perovskaya, 15, kv. 41; Stanislav I. Gusev, ulitsa akademika Skryabina, 28, korpus 2, kv. 87; Lev V. Kozlov, Bolshoi Simonovsky proezd, 28, kv. 40; Sergei V. Pokrovsky, Tarutinskaya utitsa, 5, korpus 3, kv. 73, and Igor I. Mozhaev, Krasnokazarmennaya ulitsa, 12, korpus 2, kv. 28, all of, Moscow, U.S.S.R.

PCT No. PCT/SU79/00046, § 371 Date May 8, 1980, § 102(e) Date May 7, 1980, PCT Pub. No. WO80/00636, PCT Pub. Date Apr. 3, 1980
PCT Filed Jul. 2, 1979, Ser. No. 195,426
Claims priority, application U.S.S.R., May 21, 1974, 2026801; Sep. 8, 1978, 2662933
Int. Cl.³ H01F 27/24, 27/36, 33/00
U.S. Cl. 363—68 7 Claims

1. A high-voltage transformer-rectifier device comprising:

a step-up three-phase transformer with a spatial magnetic circuit having a symmetry axis and carrying a primary winding and a sectionalized secondary winding having a secondary-winding neutral and a plurality of sections;

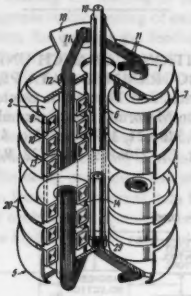
bridge rectifier units coupled to said sectionalized secondary winding and having one pole grounded and arranged parallel to the symmetry axis of the magnetic circuit;

a potential screen for the secondary-winding neutral;

a high-voltage terminal arranged along the symmetry axis of the magnetic circuit; and

a rectifier-unit potential screen electrically connected to the high-voltage terminal;

wherein the spatial magnetic circuit comprises an insulating frame, and three vertical stacks of closed cores insulated from one another and secured in said insulating frame, said cores having a common window with an axis and carrying sections of the secondary winding, the primary winding



comprising three flat rectangular coils having vertical parts arranged to lie pair-wise along the axis of the common window in each stack of the cores, and wherein the bridge rectifier units each comprise individual bridge rectifiers connected to the sections of the secondary winding, and each of the potential screens comprises ring sections arranged one on top of another along the stacks of the cores.

4,338,658

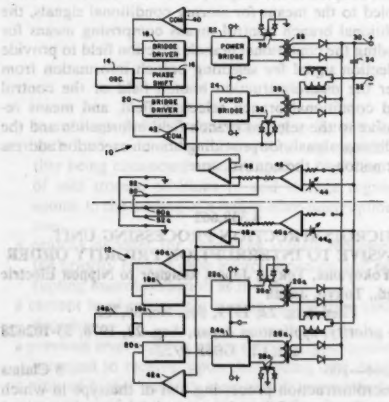
MASTER-SLAVE HIGH CURRENT D.C. POWER SUPPLY

Samson K. Toy, Sunnyvale, Calif., assignor to Boschert, Incorporated, Sunnyvale, Calif.

Filed May 14, 1981, Ser. No. 263,430

Int. Cl.³ H02J *1/10*; H02M *3/335*

U.S. Cl. 363—72 **9 Claims**



1. A high current regulated D.C. power supply comprising a master power supply and at least one slave power supply, the output voltages of said slave supplies being controlled by said master supply, and said slave supplies equally sharing the current load with said master supply, each of said master and slave supplies being identical and including:

first and second power bridges, each having input conductors coupled across a source of high voltage D.C. power and each having switching means in each diagonal leg;

first and second step-down transformers respectively coupled to the output conductors of said first and second power bridges;

first and second rectifying circuits respectively coupled to the secondary windings of said first and second step-down transformers, the output conductors of said first and second rectifying circuits being coupled together and to the output terminals of the D.C. power supply;

switching circuitry coupled to said switching means in each leg of said first and second power bridges, said switching circuitry alternately enabling said switching means in opposite diagonal legs of said first power bridge and 90 electrical degrees thereafter alternately enabling said switching means in opposite diagonal legs of said second power bridge; and error signal circuitry having a first input for sensing the output voltage level of said power supply and a second input for sensing an adjustable D.C. voltage reference, said error signal circuitry generating an output error signal representing the difference in levels between said output voltage and said reference voltage;

first and second current sensors associated with the secondary circuit of said first and second step-down transformers, said current sensors producing a D.C. output signal; and

first and second signal comparators coupled to the output conductors of said error signal circuitry and said first and second current sensors, respectively, each of said comparators generating an instantaneous turnoff signal to its respective power bridge when current measured by its respective current sensor reaches a predetermined level;

the improvement comprising the method for intercoupling at least two of said supplies into a master and slave supply system, said intercoupling method including the steps of:

disconnecting the first input to said error signal circuitry in each selected slave power supply;

connect to ground said output error signals generated by said error signal circuitry in each of said slave power supplies;

interconnect the signal ground circuits of the master power supply and each of said slave power supplies;

connect the output from said error signal circuitry of said master supply to said first and second signal comparators of each of said slave supplies; and

interconnect the D.C. output terminals of all said slave supplies and said master power supply.

4,338,659

POSITION CONTROL SYSTEM FOR A CLOSED LOOP TYPE NUMERICAL-CONTROLLED MACHINE TOOL

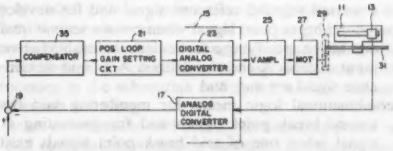
Mitsuo Kurakake, Kokubunji, Japan, assignor to Fujitsu Fanuc Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,864

Claims priority, application Japan, Dec. 15, 1978, 53-156692; Jan. 31, 1979, 54-10227; Feb. 14, 1979, 54-15905; Feb. 14, 1979, 54-15906

Int. Cl.³ G05B *13/04, 17/02*

U.S. Cl. 364—170 **13 Claims**



1. A position control system for a closed loop numerical-controlled machine tool in which the position of a mechanical

moving part is controlled according to a position command, said system comprising

a position detector mounted for detecting the position of the mechanical moving part,

means for determining a positioning error signal by making a comparison between the position command and the detected position from said position detector, and

correcting means for reducing the positioning error signal resulting from the inclusion of the mechanical moving part in the closed loop, said correcting means comprising a compensator included in the closed loop, said compensator comprising

a processor,

means for increasing the break angular frequency of said closed loop including the mechanical moving part, and for increasing the gain of the feedback of the closed loop in correspondence to the value of said positioning error signal in a stable region of the closed loop, said gain being usable for higher frequencies as a result of said increased break angular frequency of said closed loop including said compensator than for frequencies without said compensator.

4,338,660

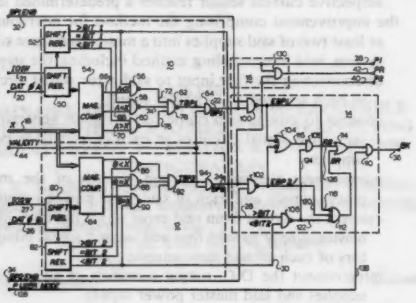
RELATIONAL BREAK SIGNAL GENERATING DEVICE

James M. Kelley, San Jose, and Fred F. Coury, Sunnyvale, both of Calif., assignors to Relational Memory Systems, Inc., Sunnyvale, Calif.

Filed Apr. 13, 1979, Ser. No. 29,825

Int. Cl.³ G06F *7/00, 7/02, 9/00*

U.S. Cl. 364—200 **8 Claims**



1. A relational break signal generating device for use in debugging and monitoring the execution of computer programs and producing break signals when a particular relationship exists between an input program address signal and a pair of selected reference address signals which define an address region, comprising:

first relational comparing means for comparing each address X of an input program signal to the address A of a first selected reference signal and for developing a first break point signal when certain first qualifying conditions specifying a particular relationship between the input address X and the address A of said first reference signal are met;

second relational comparing means for comparing each address X of said input program signal to the address B of a second selected reference signal and for developing a second break point signal when certain second qualifying conditions specifying a particular relationship between the input address X and the address A of said second reference signal are met; and

combinational logic means for monitoring said first and second break point signals and for generating a break signal when one of said break point signals exists and certain third qualifying conditions are met, said third qualifying conditions including either the condition that the magnitude of the address X of said input program signal is greater than the magnitude of the address A of said first reference signal but less than the magnitude of the address of said second reference signal or the condition that the magnitude of the address X of said input progress signal is either less than or equal to the magnitude of the address A of said first reference signal or that the magnitude of the address X of said input program signal is either greater than or equal to the magnitude of the address B of said second reference signal.

4,338,661

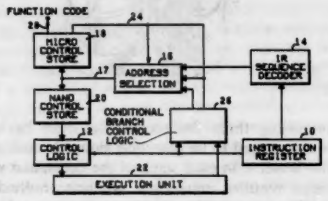
CONDITIONAL BRANCH UNIT FOR MICROPROGRAMMED DATA PROCESSOR

Harry L. Tredennick, and Thomas G. Gunter, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 21, 1979, Ser. No. 41,201

Int. Cl.³ G06F *9/06, 9/22, 9/30*

U.S. Cl. 364—200 **5 Claims**



1. A data processor adapted for microprogrammed operation for executing a plurality of macroinstructions, the data processor comprising:

(a) first means for storing a macroinstruction having a field containing conditional branch information;

(b) a control store having an input port for receiving a control store address and an output port providing a control word which includes a conditional branch selection field; and

(c) means for storing conditional signals indicative of the operational state of the data processor,

(d) conditional branch control means coupled to the first means, coupled to the output port of the control store, and coupled to the means for storing conditional signals, the conditional branch control means comprising means for decoding the conditional branch selection field to provide a selection signal for selecting branch information from either the macroinstruction branch field or the control word conditional branch selection field, and means responsive to the selected branch field information and the conditional signals for providing branch execution address information to the control store.

4,338,662

MICROINSTRUCTION PROCESSING UNIT RESPONSIVE TO INTERRUPTION PRIORITY ORDER

Yasushi Yokoyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,709

Claims priority, application Japan, Aug. 22, 1978, 53-102628

Int. Cl.³ G06F *9/22*

U.S. Cl. 364—200 **5 Claims**

1. A microinstruction processing unit of the type in which microinstructions are fed and executed in a predetermined sequence to process data in a data processing system, said microinstructions having various priority ranks such that, upon the feeding of an interrupting microinstruction of a higher priority rank, the execution of a previously fed microinstruction of lower priority rank will be interrupted, said microinstructions including load accumulator instructions, unload accumulator instructions, arithmetic instructions and return-

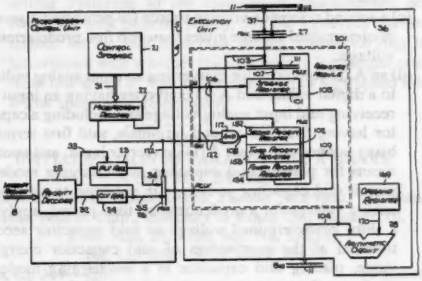
after-interruption instructions, said microinstruction processing unit comprising:

a microprogram control storage for storing microinstructions to be fed in said predetermined sequence,

a storage register, a register file and an arithmetic circuit,

control means connected to said storage register for causing the receiving and storing of data from an external data bus in response to the feeding of each load accumulator instruction, for causing the feeding of data to an external data bus in response to the feeding of each unload accumulator instruction, for causing the feeding of data and the receiving of data from said arithmetic circuit in response to the feeding of each arithmetic instruction and for receiving data from said register file in response to the feeding of each return-after-interruption instruction,

said register file having a plurality of data storage positions, each said position representing a different priority rank, said register file being connected and arranged to receive and store data from said external data bus in response to the feeding of each load accumulator instruction which is lower than the highest priority rank and to store such data



in a storage position corresponding to the priority rank of such load accumulator instruction, said register file further being connected and arranged to feed data from one of said storage positions to said storage register in response to the feeding of a return-after-interruption instruction,

a priority decoder for producing signals representative of the priority rank of each microinstruction and each interrupting microinstruction as it is fed,

a current level register for storing signals from said priority decoder,

a previous level register, of the stacking type, connected and arranged to receive, upon the feeding of a microinstruction of higher priority rank which interrupts a microinstruction of lower priority rank, the signals previously stored in said current level register, and

a multiplexer associated with said register file and connected and arranged to select, according to the signals in said previous level register, and upon the occurrence of a return-after-interruption instruction, the data storage position in said register file from which data is fed to said storage register.

4,338,663

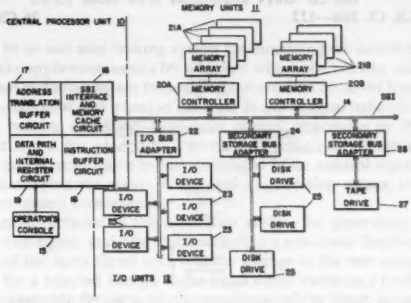
CALLING INSTRUCTIONS FOR A DATA PROCESSING SYSTEM

William D. Strecker, Harvard; Thomas N. Hastings, Lexington, both of Mass.; Richard F. Lary, Colorado Springs, Colo.; David P. Rodgers, Acton, and Steven H. Rothman, Bolton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 954,602, Oct. 25, 1978, Pat. No. 4,241,399, which is a continuation-in-part of Ser. No. 845,416, Oct. 25, 1977, abandoned. This application Sep. 18, 1980, Ser. No. 188,291

Int. Cl.[3] G06F *9/40*

U.S. Cl. 364—200 **10 Claims**



1. A central processor for a data processing system which system further includes a memory for storing instructions that are grouped in routines, at least one routine constituting a subroutine for processing information in an argument list, a predetermined memory location of the subroutine storing operating information that defines the operating environment of the central processor while it is processing the subroutine, and at least one other routine in the memory being a calling routine that utilizes the subroutine and that contains a subroutine calling instruction that includes an operation code, a first operand specifier for identifying a representation of the argument list to be passed from the calling routine to the subroutine and a second operand specifier for identifying the predetermined location in the memory, said central processor comprising:

A. a program counter register for addressing instructions in the memory,

B. A stack pointer register for addressing locations in a memory stack including a block of consecutive memory locations,

C. operating environment means for storing operating information that defines the operating environment for said central processor unit of the routine being processed by said central processor,

D. instruction decoding means for decoding the instruction operation codes,

E. operand retrieval means connected to said instruction decoding means for decoding the operand specifiers of the subroutine when said instruction decoding means decodes an operation code as a subroutine calling instruction, and

F. control means connected to said operating environment means, said instruction decoding means and said operand retrieval means for controlling the response of said central processor to the subroutine calling instruction, said control means including:

i. means connected to said instruction decoding means and said operating environment means for storing the operating information for the calling routine in the memory stack at locations specified by said stack pointer register prior to the execution of the subroutine thereby auto-

matically to save processor state information for the calling routine, and

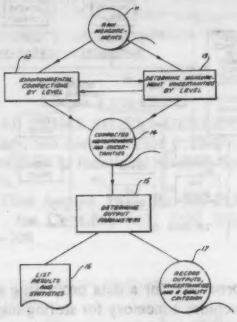
ii. means for transferring the operating information from the subroutine to said operating environment means thereby to establish the operating environment for said central processor during the processing of the subroutine.

4,338,664

METHOD OF EVALUATING FORMATIONS TRAVERSED BY A BOREHOLE

Claude Mayer, Paris, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 19, 1980, Ser. No. 151,504
Int. Cl.³ G01V *3/18, 3/38, 5/04;* G06F *15/20*
U.S. Cl. 364—422 **26 Claims**



26. A method of obtaining an improved display of a trace over a depth interval of values of output parameters characteristic of the geologic formations traversed by a borehole, said method including the steps of:

(a) generating signals indicative of actual values for a plurality of borehole and/or formation parameters;

(b) deriving a plurality of response equations which functionally relate at least some of said formation parameters to said output parameters;

(c) utilizing said response equations and assumed values of said output parameters to obtain signals indicative of calculated or theoretical values for each of said at least some of said formation parameters;

(d) generating signals indicative of uncertainties for said responsive equations and for each of said at least some of said formation parameters;

(e) generating signals indicative of the differences between said calculated or theoretical value signals and said actual value signals;

(f) generating signals indicative of weighting factors dependent on said response equation uncertainty signals and said formation parameter uncertainty signals, said weighting factor signals being functionally related to the inverse of the sum of the squares of said uncertainty signals;

(g) combining said difference signals and said weighting factor signals to generate an incoherence function signal functionally related to the sum of the squares of said difference signals and directly related to said weighting factor signals;

(h) varying said assumed values of said output parameters until said incoherence signal has obtained a minimum value and generating output parameter signals indicative of the assumed values corresponding to said minimum incoherence signal;

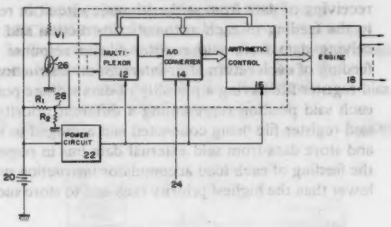
(i) recording on a medium a trace representation over said depth interval of an output parameter signal and a trace representation over said depth interval of said minimum incoherence function signal.

4,338,665

DATA GATHERING SYSTEM FOR AUTOMOTIVE VEHICLES

Shigeo Aono, Tokyo, and Sadao Takase, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 30, 1980, Ser. No. 154,768
Claims priority, application Japan, May 31, 1979, 54-67709
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—424 **3 Claims**



1. A system comprising:

(a) at least one sensor for providing an analog sensor voltage signal related to an engine operating condition;

(b) a first reference voltage source for providing a first predetermined voltage indicative of a first reference value;

(c) a second reference voltage source for providing a second predetermined voltage lower than said first predetermined voltage;

(d) an A/D converter for converting an input analog voltage to a digital value, said A/D converter having an input for receiving said input analog voltage and including a capacitor having first and second terminals, said first terminal being connected to said A/D converter input, and control means for placing said capacitor in a charging mode to permit said capacitor to charge in response to said input analog voltage for a predetermined time period, applying a third predetermined voltage to said capacitor second terminal at the termination of said capacitor charging mode, placing said capacitor in a discharging mode to discharge the same at a constant rate until the voltage at said capacitor first terminal falls to a predetermined value after the termination of said capacitor charging mode, and resetting said capacitor to its initial state;

(e) a multiplexor having data channels for connecting said first and second reference voltage sources and said sensor to said A/D converter input, respectively; and

(f) a digital computer for sequentially selecting said multiplexor data channels in a desired order for sequentially coupling said first and second reference voltage sources and said sensor to said A/D converter input, said digital computer storing a digital value corresponding to said first reference value and receiving from said A/D converter and storing digital values for said sensor voltage and said first and second predetermined voltages, and calculating a corrected digital value corresponding to the sensor voltage from said stored digital values.

4,338,666

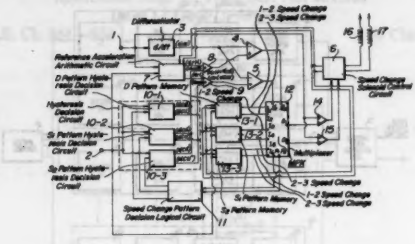
SPEED CHANGE CONTROL DEVICE FOR AUTOMATIC TRANSMISSION

Tadashi Suzuki, and Norimasa Kishi, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jul. 3, 1980, Ser. No. 165,705
Claims priority, application Japan, Jul. 9, 1979, 54-86614
Int. Cl.³ B60K *41/04*
U.S. Cl. 364—424.1 **8 Claims**

1. In a shift control device for an automatic transmission having a vehicle speed sensor (1) for sensing vehicle speed to

generate vehicle speed signals, an engine load sensor (2) for sensing engine load to generate signals representing the engine load, a shift control circuit (6) connected to said sensors (1, 2) for generating shift position and instruction signals based on any one of at least two predetermined shift patterns (D, S_1, S_2) of a transmission range suitable for different driving conditions of a vehicle in accordance with output signals supplied from both sensors, the shift instruction signals being supplied to shift solenoids (16, 17), the improvement comprising:



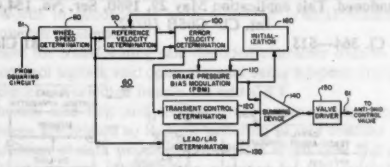
a shift pattern decision circuit connected between the sensors (1, 2) and the shift control circuit (6) for generating signals capable of selecting and deciding any one of the shift patterns of the transmission range, said shift pattern decision circuit including a hysteresis setting means for setting hysteresis to the changeover characteristic between the shift patterns (D, S_1, S_2), the hysteresis characteristic set by said hysteresis setting means varying in accordance with whether the shift pattern is changed over from low speed to high speed side or from high speed side o low speed side, respectively.

4,338,667

INITIALIZATION APPARATUS FOR A BRAKE CONTROL SYSTEM

Robert D. Cook, Valencia, and Thomas Skarvada, Woodland Hills, both of Calif., assignors to Crane Co., Chicago, Ill.

Filed Mar. 20, 1980, Ser. No. 132,112
Int. Cl.³ B60T *8/02*; G06F *15/20*
U.S. Cl. 364—426 **38 Claims**



1. In a vehicle antiskid brake control system for controlling the braking action on a braked wheel during a braking period to slow the vehicle from a higher speed to a lower speed; said system including modulator means for generating a modulated brake control signal; and valve means, responsive to the brake control signal, for controlling the braking of said braked wheel; the improvement comprising:

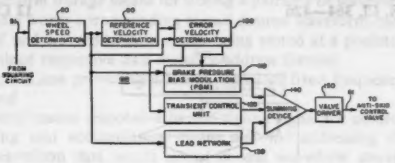
means for initializing said modulator means by modifying said brake control signal to reduce braking action on said braked wheel, said initializing means operative only during an initial reduction in braking action by said valve means after a selected time period of substantially no reduction in braking action by said valve means, said selected time period being shorter in duration than the braking period such that the initializing means may operate repeatedly during the braking period to initialize said modulator means.

4,338,668

MODULATOR FOR ANTI-SKID BRAKING SYSTEM

Robert D. Cook, Valencia, Calif., assignor to Crane Co., Chicago, Ill.

Filed May 7, 1980, Ser. No. 147,385
Int. Cl.³ B60T *8/00*; G06F *15/20*
U.S. Cl. 364—426 **21 Claims**



1. In an anti-skid braking system for modifying the action of a brake application means for a braked wheel of a vehicle, said system including means for utilizing information obtained from the rotation of said wheel to generate an input signal indicative of a braking condition; modulator means, responsive to the input signal, for generating a modulated brake control signal; and means, responsive to the modulated brake control signal, for modifying the action of the brake application means; the improvement comprising:

means, included in the modulator means, for generating a rate signal, said rate signal including a non-linear function of the input signal such that the change in the rate signal for a selected change in the input signal varies as a freely selectable function of the magnitude of the input signal; and

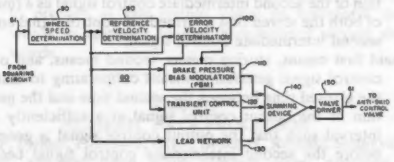
means, included in the modulator means, for generating the modulated brake control signal as a time integral function of the rate signal, said non-linear function chosen to promote effective control of the action of the brake application means.

4,338,669

MODULATOR FOR ANTI-SKID BRAKING SYSTEM

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed May 7, 1980, Ser. No. 147,386
Int. Cl.³ B60T *8/00*; G06F *15/20*
U.S. Cl. 364—426 **18 Claims**



1. In an anti-skid braking system for modifying the action of a brake application means for a braked wheel of a vehicle, said system including means for utilizing information obtained from the rotation of said wheel to generate an input signal indicative of a braking condition; modulator means, responsive to the input signal, for generating a modulated brake control signal; means, included in the modulator means, for generating a rate signal as a function of both the input signal and a threshold signal; means, included in the modulator means, for generating the modulated brake control signal as a time integral function of the rate signal; and means, responsive to the modulated brake control signal, for modifying the action of the brake application means; the improvement comprising:

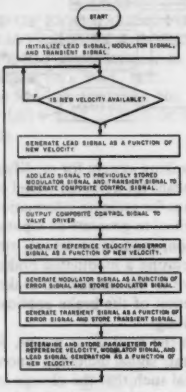
means, included in the modulator means, for generating the threshold signal as a function of a velocity signal generally indicative of the velocity of the braked wheel.

4,338,670

METHOD AND APPARATUS FOR GENERATING A CONTROL SIGNAL AS A FUNCTION OF A PLURALITY OF INTERMEDIATE CONTROL SIGNALS

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed May 7, 1980, Ser. No. 147,594
Int. Cl.³ B60T *8/00*; G05B *19/02*; G06F *15/20*
U.S. Cl. 364—426 **12 Claims**


START
INITIALIZE LEAD SIGNAL, MODULATOR SIGNAL, AND TRANSIENT SIGNAL
IS NEW VELOCITY AVAILABLE?
GENERATE LEAD SIGNAL AS A FUNCTION OF NEW VELOCITY
ADD LEAD SIGNAL TO PREVIOUSLY STORED MODULATOR SIGNAL AND TRANSIENT SIGNAL TO GENERATE COMPOSITE CONTROL SIGNAL
OUTPUT COMPOSITE CONTROL SIGNAL TO VALVE DRIVER
GENERATE REFERENCE VELOCITY AND ERROR SIGNAL AS A FUNCTION OF NEW VELOCITY.
GENERATE MODULATOR SIGNAL AS A FUNCTION OF ERROR SIGNAL AND STORE MODULATOR SIGNAL.
GENERATE TRANSIENT SIGNAL AS A FUNCTION OF ERROR SIGNAL AND STORE TRANSIENT SIGNAL.
DETERMINE AND STORE PARAMETERS FOR GENERATING VELOCITY, MODULATOR SIGNAL, AND LEAD SIGNAL GENERATION AS A FUNCTION OF NEW VELOCITY.

1. A control apparatus responsive to input means for generating a periodically adjusted input signal, said input signal having a first input value at a first time and a second input value at a second time, subsequent to the first time, said apparatus comprising:

first means, responsive to the input means, for generating a first intermediate control signal prior to the second time as a function of the first input value of the input signal;

means for storing the first intermediate control signal prior to the second time;

second means, responsive to the input means, for generating a second intermediate control signal after the second time as a function of the second input value of the input signal, said second intermediate control signal varying more rapidly with time than the first intermediate control signal; and

means for generating an output control signal after generation of the second intermediate control signal as a function of both the stored first intermediate control signal and the second intermediate control signal;

said first means, storing means, second means, and output control signal generating means cooperating to maintain the elapsed time between the second time and the generation of the output control signal at a sufficiently short interval such that the output control signal is generated before the second intermediate control signal becomes stale.

4,338,671

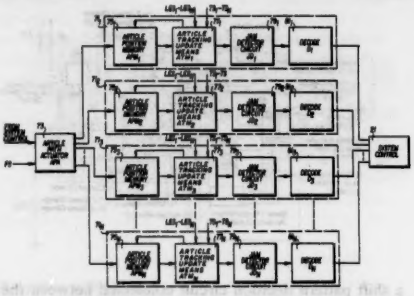
METHOD AND APPARATUS FOR MONITORING THE PASSAGE OF ARTICLES THROUGH A MODULAR PROCESSING SYSTEM

Henry M. Korytkowski, and Frederick H. Dear, both of Rochester, N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 844,475, Oct. 21, 1977. This application Dec. 3, 1979, Ser. No. 99,961
Int. Cl.³ G08B *21/00*; B65H *7/02*
U.S. Cl. 364—478 **8 Claims**

1. An apparatus establishing logical article paths for monitoring the processing of articles within a modular article processing system, comprising:

a plurality of logical article paths for tracking the position of articles within said article processing system, each of said logical article paths comprising memory means for updatably storing data indicating the position of said associated article within said processing system, means coupled to said memory means for periodically updating the position of said associated article within said memory means responsive to a change in the position of said associated article within said article processing system, processing system failure detection means coupled to said updating means for detecting the failure of said article processing



system upon the failure of an article to change position within a predetermined time period; and decode means coupled to said detection means for determining the malfunctioning module within a modular article processing system; and

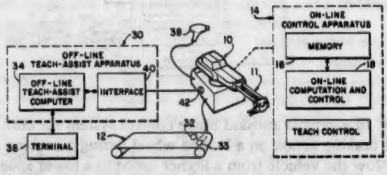
means for associatively activating article path in response to each article entered into the processing system, whereby each article will be associated with an individual logical article path while it is being processed in said processing system.

4,338,672

OFF-LINE TEACH ASSIST APPARATUS AND ON-LINE CONTROL APPARATUS

William Perzley, Weston, and Yung-Ming Yen-Chen, Brookfield Center, both of Conn., assignors to Unimation, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 898,112, Apr. 20, 1978, abandoned. This application May 29, 1980, Ser. No. 154,439
Int. Cl.³ G05B *19/42*
U.S. Cl. 364—513 **81 Claims**



1. In a programmable manipulator provided with a manipulator arm which is movable in a plurality of axes, having means for developing position signals corresponding to the actual position of said arm in said plurality of axes and arranged adjacent a predetermined work path to perform a series of operations with respect to a workpiece moving along said work path, the combination of:

means for positioning said arm at different locations relative to a stationary workpiece during an initial teaching operation;

means for precomputing signals representing movement of said arm between said different locations relative to the workpiece accounting for projected workpiece movement and corresponding to movement at the maximum dynamic capabilities of said manipulator arm; and

means for storing said precomputed signals for use as command signals in controlling movement of said arm in a playback cycle with a moving workpiece.

4,338,673

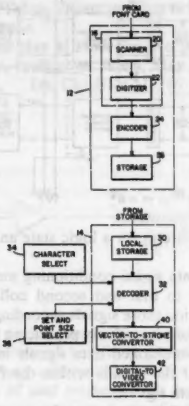
PHOTOTYPESETTING SYSTEM AND METHOD

Kenneth W. Brown, Framingham, Mass., assignor to Compugraphic Corporation, Wilmington, Mass.

Continuation of Ser. No. 966,638, Dec. 5, 1978, abandoned. This application Aug. 27, 1980, Ser. No. 181,808

Int. Cl.³ G06F *3/153, 15/20*

U.S. Cl. 364—523 **30 Claims**



8. System for generating phototypesetting control signals for a cathode ray tube (CRT) having a constant stroke rate raster pattern, comprising:

means for scanning selected images and generating character data representative thereof,

means for encoding said character data in accordance with a first predetermined sequence of steps to generate an ordered succession of encoded untagged character data words,

means for decoding said encoded untagged character data words in accordance with a second predetermined sequence of steps,

means for transforming said decoded character data to said control signals, said control signal being adapted to reproduce said selected images on said CRT,

wherein said first and second predetermined sequence of steps are related so that the ordering of said ordered succession of data words provides data word type and contour segment identification required by said second sequence of steps to generate stroke signals for said output CRT,

wherein said first predetermined steps are adapted so that said second predetermined steps may be selectively modified to provide selective scaling of reproduction of said selected images on said CRT.

4,338,674

DIGITAL WAVEFORM GENERATING APPARATUS

Osamu Hamada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 1, 1980, Ser. No. 136,296

Claims priority, application Japan, Apr. 5, 1979, 54-41324

Int. Cl.³ G10H *1/00, 1/06*

U.S. Cl. 364—718 **5 Claims**

1. Digital waveform generating apparatus for generating a signal of a desired waveform at a selected frequency within a frequency range comprising

generating means for generating a first data word whose digital value corresponds to said selected frequency;

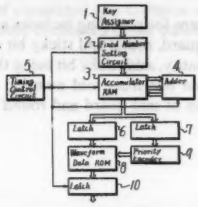
accumulating means for storing a second data word corresponding to a data memory address;

adding means for adding the first data word to the second data word and storing the result in said accumulating means as an accumulated second data word;

waveform storage means for storing a plurality of waveform data words corresponding to said desired waveform, each of said waveform data words being stored at a predetermined respective data memory address therein;

clock means providing a timing signal of fixed frequency; and

control means responsive to said timing signal for controlling said accumulating means and for addressing the waveform data words stored in said waveform storage means in accordance with the accumulated second data word stored in said accumulating means upon occurrence



of said timing signal so that the addressed waveform data words are read out from said waveform storage means as said output signal;

wherein, to avoid a folded error in the output signal, said waveform storage means is partitioned into a plurality of data banks each corresponding to a predetermined portion of said frequency range and each storing a corresponding plurality of waveform data words therein, with each such plurality of waveforms data words representing waveforms having progressively fewer harmonics as the frequency of the corresponding portion of the frequency range increases, and said control means includes means for selecting one of said data banks in accordance with the particular portion of the frequency range containing said selected frequency to provide as said output signal its waveform data words in response to said accumulated second data words.

4,338,675

NUMERIC DATA PROCESSOR

John F. Palmer, Hillsboro, Oreg.; Bruce W. Ravenel, Sunnyvale, Calif., and Rafi Nave, Kiriat Motzkia, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 13, 1980, Ser. No. 120,995

Int. Cl.³ G06F *7/48, 9/00, 11/00*

U.S. Cl. 364—748 **10 Claims**

1. An improvement in a numeric data processor for performing calculations on a plurality of data formats representable by a fraction and exponent representation comprising:

first means for converting said plurality of data formats to a file format having a fraction and exponent representation wherein said file format has a numeric fraction and exponent domain greater than any one of said plurality of data formats;

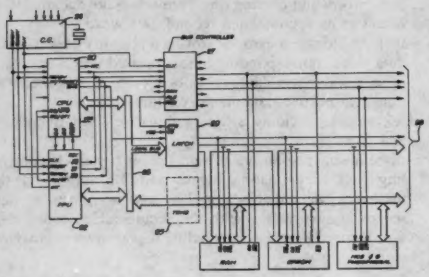
a fraction and exponent bus coupled to said first means;

a stack of registers configured to store numeric information in said file format, said stack coupled to said exponent and fraction bus;

an arithmetic unit to perform arithmetic operations on said

information in said file format, said arithmetic unit being coupled to said fraction bus; and

means for rounding said numeric information in a selected one of a plurality of modes,



wherein said means for rounding includes a three bit register for storing a guard, round and sticky bit corresponding to a numeric quantity, said sticky bit being the Or-function of all right shifted bits from said numeric quantity beyond the bit location of said guard and round bits.

4,338,676

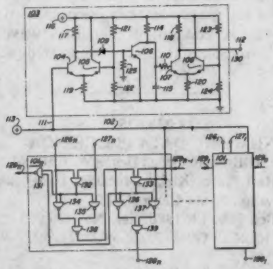
ASYNCHRONOUS ADDER CIRCUIT

Bruce E. Briley, Countryside, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 14, 1980, Ser. No. 167,930

Int. Cl.³ G06F *7/50*

U.S. Cl. 364—786 **10 Claims**



1. An electrical circuit comprising:

a power supply bus (**102**); and

logic circuit means (**101**$_n$) connected to said bus and causing voltage variations on said bus during the performance of logic operations;

characterized in that

said electrical circuit further comprises detector means (**103**) coupled to said bus for detecting said variations and for generating a completion signal indicating completion of said logic operations, after said variations have ceased to occur.

4,338,677

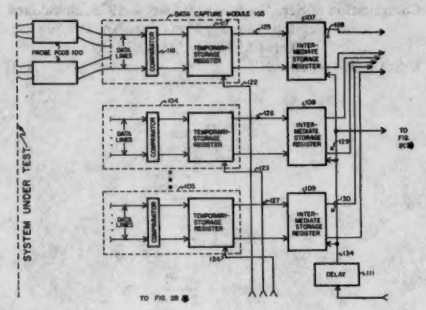
MULTI-CLOCK DATA CAPTURE CIRCUIT

Justin S. Morrill, Jr., Cascade, and John D. Hansen, Colorado Springs, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 17, 1980, Ser. No. 160,262

Int. Cl.³ G06F *3/00, 3/14*

U.S. Cl. 364—900 **5 Claims**



1. A data capture circuit for a logic state analyzer comprising:

first and second data signal conditioning means for respective connection to first and second collections of data signals to condition those signals according to preselected thresholds and for respectively producing first and second collections of conditioned data signals indicative of the logical values of the signals within the first and second collections of data signals;

qualifier signal conditioning means for connection to a collection of qualifier signals to condition those signals according to preselected thresholds and for producing a collection of conditioned qualifier signals indicative of the logical value of the signals within the collection of qualifier signals;

first and second clock signal conditioning means for respective connection to first and second clock signals to condition those signals according to preselected thresholds and for respectively producing first and second conditioned clock signals indicative of the logical values of the first and second clock signals;

qualifier pattern detection means coupled to the collection of conditioned qualifier signals for producing first and second qualifier pattern signals, each qualifier pattern signal being produced in response to the occurrence of a respective and preselected logical combination of the signals within the collection of conditioned qualifier signals;

first and second clock qualification means each respectively coupled to a separate one of the first and second conditioned clock signals and to a separate one of the first and second qualifier pattern signals for respectively producing first and second qualified clock signals, each of which represents the logical conjunction of a conditioned clock signal and an associated qualifier pattern signal;

first and second temporary storage means respectively connected to the first and second collections of conditioned data signals and respectively to the first and second qualified clock signals for respectively storing the values of the signals within the first and second collections of conditioned data signals upon the respective occurrence of the first and second qualified clock signals;

qualified clock selection means coupled to the first and second qualified clock signals for producing a master clock signal at the conclusion of a delay beginning upon the occurrence of a preselected one of the first and second qualified clock signals;

intermediate storage means coupled to receive the contents of the first and second temporary storage means and to the

master clock signal for storing the contents of the first and second temporary storage means upon the occurrence of the master clock signal, whereby the first and second temporary storage means are freed to store new data and their combined contents thereafter treated as a single entity;

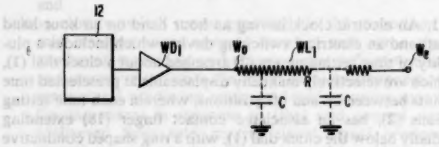
data memory means coupled to receive the contents of the intermediate storage means and to the master clock signal for storing the contents of the intermediate storage means in response to the occurrence of the master clock signal.

4,338,678

MEMORY DEVICE

Yasuo Akatsuka, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,786
Claims priority, application Japan, May 10, 1979, 54/57250
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—174 **15 Claims**



1. A memory device comprising: a plurality of word lines having a predetermined length; a plurality of digit lines; a plurality of memory cells coupled to the word lines and the digit lines, each of said memory cells being responsive to a selection level on an associated one of said word lines to put said associated one of said word lines in such a state that data is transferred between it and an associated one of said digit lines; means for receiving a plurality of address signals; a word decoder circuit having a plurality of decode outputs not more in number than the number of said word lines, said word decoder circuit selectively enabling one of said decode outputs in response to the address signals; a plurality of word driver circuits each coupled to a first end of an associated word line and to an associated decode output, each said driver circuit supplying said first end of an associated one of said word lines with a selection signal in response to an enabled decoder output; a plurality of word level detection circuits each coupled to a second end of an associated one of said word lines opposite said first end, said word level detection circuits detecting level changes towards said selection level at said second ends of said word lines caused by associated word driver circuits; and a plurality of auxiliary word driver circuits each coupled to said second end of associated ones of said word lines and to an associated word level detection circuit, each said auxiliary word drive circuit providing said second end of its associated word line with a signal having the same polarity as said selection signal when the associated word level detection circuit detects said level change, whereby a time period required to set an entire selected word line at a selection level is reduced.

4,338,679

ROW DRIVER CIRCUIT FOR SEMICONDUCTOR MEMORY

James E. O'Toole, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01727, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 24, 1980
PCT Filed Dec. 24, 1980, Ser. No. 273,845
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **6 Claims**

6. A row driver circuit for driving row lines in a semiconductor memory, comprising:

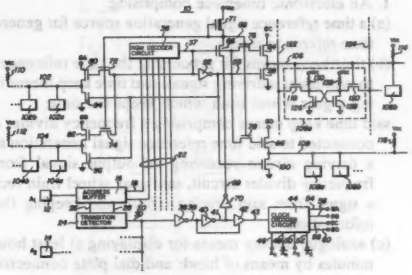
a row driver transistor for each of the row lines of the semiconductor memory, each of the row driver transistors having a drain terminal, a source terminal and a gate terminal, the source terminal of each row driver transistor connected to the corresponding row line;

a row decoder circuit for receiving a plurality of first address bits and generating a drive signal at the output terminal thereof when said row decoder circuit is selected by said first address bits;

a transition detector circuit for each of said first address bits, said transition detector circuits connected to receive said first address bits and generate a transition signal having a preset duration active state upon detection of a change of state for any one of said first address bits;

an inverter circuit having an input and an output terminal, the input terminal thereof connected to the output terminal of said row decoder circuit;

a pull down transistor for each of said row lines, each of said pull down transistors having the drain terminal thereof connected to the corresponding row line, the source terminals thereof connected to a common node and the gate terminals thereof connected to the output terminal of said inverter;



a first transistor having the gate terminal thereof connected to the output terminal of said row decoder, the drain terminal thereof coupled through an impedance element to a fixed voltage node, and the source terminals thereof connected to receive said transition signal;

an isolation transistor for each of said row lines, each of said isolation transistors having the drain terminal thereof connected to the output terminal of said row decoder circuit, the source terminal thereof connected to the gate terminal of the corresponding row driver transistor and the gate terminal thereof connected to the drain terminal of said first transistor; and

a clock decoder circuit connected to receive a plurality of second address bits for generating any one of a plurality of clock signals at the respective output terminals thereof, said output terminals connected respectively to the drain terminals of said row driver transistors for capacitively coupling the voltage on the precharged gate terminals of the corresponding row driver transistor to activate the corresponding row driver transistor to charge the corresponding row line to the voltage of the clock signal.

4,338,680
ELECTRONIC TIMEPIECE

Yasushi Nomura, Tokorozawa, Japan, assignor to Citizen Watch Co. Ltd., Tokyo, Japan

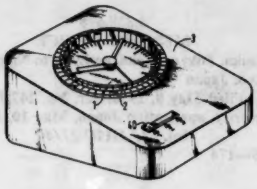
Continuation of Ser. No. 837,334, Sep. 28, 1977, abandoned. This application May 14, 1979, Ser. No. 38,788
Claims priority, application Japan, Sep. 28, 1976, 51-116441; Sep. 28, 1976, 51-116442
Int. Cl.³ G04B 19/24, 25/00; G04C 19/00
U.S. Cl. 368—29 12 Claims

1. An electronic timepiece comprising:
(a) a time reference signal generation source for generating a time reference signal;
(b) time keep means for processing the time reference signal to synthesize a driving signal, said time keep means including a gear wheel train which keeps the time;
said time keep means comprising a frequency divider circuit connected to said time reference signal generation source, a driving circuit receiving an output signal from said frequency divider circuit, said gear wheel train receiving a signal from said driving circuit and keeping the time information;
(c) analogue display means for displaying at least hours and minutes by means of hands and dial plate connected with said gear wheel train;
(d) electrical time keep means for receiving an output signal from said time keep means and for keeping a time information of at least hours and minutes;
said electrical time keep means converting the time information kept by said gear wheel train into an electrical signal;
(e) external alarm actuating means for providing an alarm time information of at least hours and minutes;
(f) an alarm memory circuit for receiving and storing the alarm time information provided by said external alarm actuating means;
(g) a coincidence detection circuit connected to said alarm memory circuit and to said electrical time keep means respectively, and receiving and comparing the alarm time information signal stored in said alarm memory circuit and the time information signal kept by said electrical time keep means detecting a coincidence thereof so as to transmit an alarm signal;
(h) an alarm emitting device emitting an alarm by the alarm signal from said coincidence detection circuit;
(i) alarm digital display means connected to said alarm memory circuit and provided at the part of a display area of said analogue display means for digitally displaying the alarm time information stored in said alarm memory circuit; and
(j) means for converting said electrical signal to a digital display corresponding to said time information kept by the gear wheel train.

4,338,681
ELECTRIC TIMING CLOCK

Egon Rapp, Schramberg, and Heinrich Oertel, St. Georgen, both of Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,091
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904744
Int. Cl.³ G04B 23/02; G04C 21/16
U.S. Cl. 368—72 13 Claims

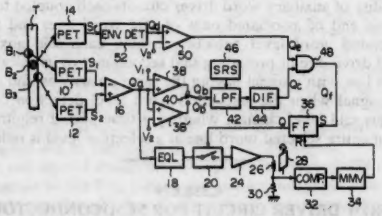


1. An electric clock having an hour hand on an hour hand shaft and an electrical switching device which includes a plurality of time setting means (2) arranged about a clock dial (1), which are selectively manually displaceable at preselected time points between on and off positions, wherein each time setting means (2), has an associated contact finger (18) extending radially below the clock dial (1), with a ring shaped conductive connection of the contact fingers (18) to each other, and wherein a contact maker (13) is provided rotating with the hour hand, characterized in that said contact fingers (18) are elastic segments on a segmented ring (15) and are pivotally maintained projecting into the path of rotation of said contact maker (13) when an associated time setting means (2) is engaged in an on position and acts on the opposite free segment end (17), and said contact maker (13) is resiliently deflected opposite to the path of its rotational movement by the contact fingers (18) pivoted into its path of movement.

4,338,682
TRACKING SERVO SYSTEM OF VIDEO DISC PLAYER

Toshihiko Hosaka, and Toru Akiyama, both c/o Universal Pioneer Tokorozawa Plant, 2610, Hanazono 4-chome, Tokorozawa-City, Saitama Prefecture, Japan

Filed Oct. 10, 1980, Ser. No. 196,143
Claims priority, application Japan, Oct. 16, 1979, 54-133697
Int. Cl.³ G11B 7/00, 21/10
U.S. Cl. 369—44 8 Claims



1. A tracking servo system for a video-disc information reading and reproducing apparatus (wherein the information carried by a video disc is to be scanned by a scanning spot displaced radially of the video disc) which apparatus includes a pick-up unit having a system for producing a scanning spot with respect to a video disc while deflecting the scanning spot radially of said video disc so as to make the scanning spot to trace a target track of the video disc, comprising:
signal level detector means mounted on said pick-up unit, for detecting the signal level of the reproducing signal read

out by the scanning spot from said video disc and producing an output signal variable with the detected signal level,

error signal producing means operative to produce a tracking error signal continuously variable in magnitude with an amount of deviation, if any, of the scanning spot from (a) said target track (on) of the video disc and having polarities respectively corresponding to the directions in which the scanning spot is to be displaced radially of the video disc,

scanning spot deflecting means mounted on said pick-up unit for deflecting said scanning spot in response to variations in magnitude of said error signal,

comparing means for comparing the output signal from said signal level detector means with reference signal having a predetermined level for producing an output signal when the former is higher in level than the later,

control signal producing means responsive to said tracking error signal and said output signal from said comparing means and operative to produce a control signal when said tracking error signal has a predetermined level in the presence of the output signal from the comparing means, and

loop closure switch means provided (in the servo loop of said tracking servo system) between said error signal producing means and said scanning spot deflecting means and operative to (close the servo loop) interconnect said error signal producing means and said scanning spot deflecting means in response to (the) said control signal (delivered from said control signal signal producing means) so as to supply said error signal to said scanning spot deflecting means.

4,338,683

VIDEODISC PLAYER WITH CONSTANT TURNTABLE VELOCITY

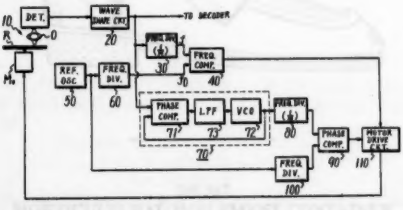
Shunsuke Furukawa; Hiroshi Ogawa; Hitoshi Okada, and Masanobu Yamamoto, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,708

Claims priority, application Japan, Nov. 15, 1979, 54-148094

Int. Cl.³ G11B *17/00*

U.S. Cl. 369—50 **1 Claim**



1. A disc record reproducing apparatus comprising, a disc on which a PCM (pulse code modulation) signal in the form of an RLLC (run length limited code) is recorded, a motor for rotating said disc, a detecting head for scanning a recording surface of said disc to detect the PCM signal, a frequency-divider for frequency-dividing a reproduced PCM signal by said detecting head with a dividing factor of m where m is greater than 100, a reference oscillator for generating a reference frequency signal, a frequency comparator coupled to said frequency divider and said reference oscillator for comparing the frequency of the signal generated from said reference oscillator with the frequency of the signal delivered from said frequency divider to produce an output proportional to the compared signals, a motor drive circuit coupled to said frequency comparator for driving said motor by the output from said frequency comparator such that the relative velocity of said detecting head to said disc becomes a constant line velocity responsive of the relative position of said detecting head to said disc, and further comprising a voltage controlled oscillator, a first phase comparator receiving the reproduced PCM signal and a signal generated by said voltage controlled oscillator and producing an output proportional to their phase differences and supplying said output to said voltage controlled oscillator, a second phase comparator receiving an input from said voltage controlled oscillator and an input from said reference oscillator and producing an output proportional to the phase differences between said inputs, and said motor drive circuit receiving an input from said second phase comparator.

4,338,684

SCANNING SYSTEM FOR REPRODUCING SIDE-BY-SIDE OPTICAL SOUND TRACKS

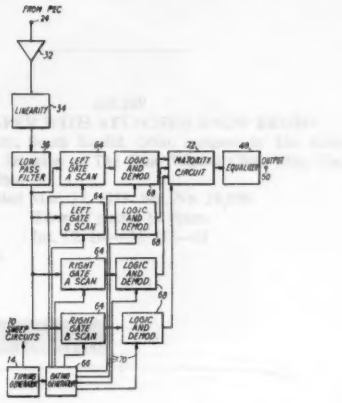
Ray M. Dolby, San Francisco, Calif., assignor to Dolby Laboratories, Inc., San Francisco, Calif.

Division of Ser. No. 778,870, Mar. 18, 1977, Pat. No. 4,223,188, which is a continuation-in-part of Ser. No. 603,671, Aug. 11, 1975, abandoned. This application Apr. 7, 1980, Ser. No. 137,902

Claims priority, application United Kingdom, Aug. 27, 1974, 37292/74

Int. Cl.³ G11B *7/14*

U.S. Cl. 369—92 **2 Claims**



1. A scanning system for reproducing a plurality of side-by-side variable area optical sound tracks, comprising

scanning means arranged to scan repeatedly across the width of all of said tracks in each scan to provide a two-level first electrical signal;

a plurality of bistable circuits;

gating means coupled between said scanning means and said bistable circuits;

a source of gating signals synchronized to said scanning means and operating said gating means to pass portions of said first signal corresponding to the different sound tracks to different ones of said bistable circuits;

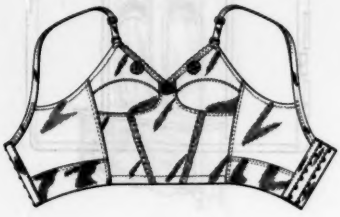
each said bistable circuit providing a two-level second signal and being responsive to the first signal portion gated thereto to set its second signal from a first level to a second level in response to a transition in the first signal occurring as said scanning means scan from an opaque area to a clear area of the corresponding sound track;

delay means operative to delay setting of each bistable circuit until said transition in the first signal is followed by maintenance of the first signal at a level corresponding to a clear area of the corresponding sound track for a predetermined length of time established by the delay means; and

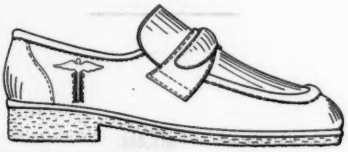
means for resetting said bistable circuits at reference instants, independently of said first signal, thereby to reset said second signals from said second level to said first level.

JULY 6, 1982

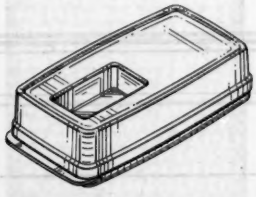
265,265
BRASSIERE
Harold Stern, Wyckoff, N.J., and William White, New York, N.Y., assignors to International Playtex, Inc., Stamford, Conn.
Filed Jul. 14, 1980, Ser. No. 167,859
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



265,266
LOAFER
Clifford C. Snyder, 875 Donner Way, Salt Lake City, Utah 84108
Filed Sep. 10, 1979, Ser. No. 74,082
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—269

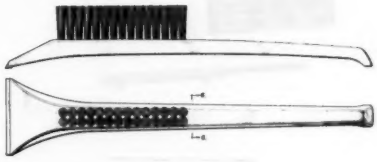


265,267
HORTICULTURAL IMPLEMENT CONTAINER
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jun. 2, 1980, Ser. No. 155,740
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1



265,268
TOTE BAG
Stephan E. Plough, 15805 Oak Valley Rd., Ramona, Calif. 92065, and David L. Swartzendruber, Ramona, Calif., assignors to Stephan E. Plough, Ramona, Calif.
Filed Aug. 25, 1980, Ser. No. 181,276
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48

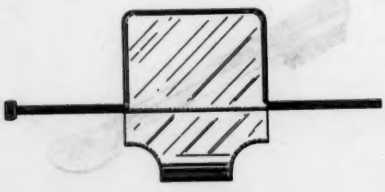
265,269
ICE SCRAPER WITH ATTACHED SNOW BRUSH
Frank B. Frantz, South Euclid, Ohio, assignor to The Atlas Textiles Co. Division of The Ohio Wiping Cloth Mfg. Co., Cleveland, Ohio
Filed Mar. 27, 1979, Ser. No. 24,196
Term of patent 14 years
Int. Cl. D4—*01*; D7—*05*
U.S. Cl. D4—6



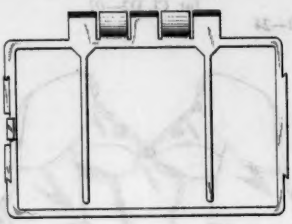
265,270
COMBINED TOOTHBRUSH AND TONGUE CLEANER
William R. McCarty, 176 Lenox Ave., Pittsfield, Mass. 01201
Filed Oct. 1, 1980, Ser. No. 192,861
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18

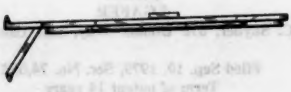
265,271
COMBINED COMPUTER-CONTROLLED DRAFTING TABLE, CHAIR AND MICROPROCESSOR BASE UNIT FOR ENGINEERING USE
Eugene L. Selleck, 419 Wolcott Ave., Beacon, N.Y. 12508
Filed Dec. 5, 1979, Ser. No. 100,366
Term of patent 7 years
Int. Cl. D6—*05*
U.S. Cl. D6—4

265,272
CHILD SEAT
Linda M. Joy, 5926 - 140th St. Southwest, Edmonds, Wash. 98020
Filed Oct. 1, 1979, Ser. No. 80,259
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9

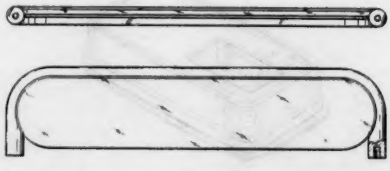


265,273
GUARDED DISPLAY HOLDER
Daniel W. Leo, Jr., Edgewater, N.J., assignor to Ledan Reproductions, Inc., New York, N.Y.
Filed Oct. 4, 1979, Ser. No. 72,028
Term of patent 14 years
Int. Cl. D06—*99*
U.S. Cl. D6—114





265,274
SHELF
Winfried Scholl, Düsseldorf, Fed. Rep. of Germany, assignor to HEWI, Heinrick Wilke GmbH, Arolsen, Fed. Rep. of Germany
Filed Aug. 7, 1979, Ser. No. 64,562
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, MR93
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—132



265,275

COMBINED DRESSER AND DUAL MIRROR UNIT

Anthony L. Bravo, Brea, Calif., assignor to Zeno Table Co., Inc., Santa Ana, Calif.

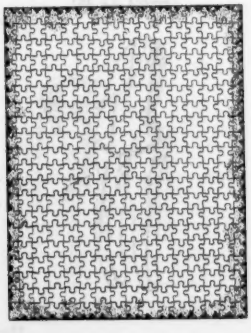
Filed Jul. 15, 1980, Ser. No. 169,223
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154

265,276

FRAME FOR PICTURE PUZZLE AND LIKE ARTICLE

Robert Malin, 4610 Densmore Ave., Apt. 207, Encino, Calif. 91436

Filed Mar. 12, 1981, Ser. No. 243,127
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



265,277

COMBINED APPLIANCE SUPPORT AND RETRACTABLE WORKING SURFACE

Charles E. Dunn, Cartersville, Ga., assignor to Wood Valley Industries, Inc., Cartersville, Ga.

Filed Sep. 18, 1980, Ser. No. 188,389
Term of patent 14 years
Int. Cl. D07—*04, 99*
U.S. Cl. D7—46

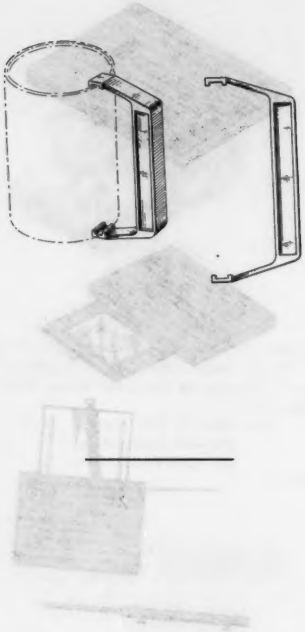
265,278

DETACHABLE CAN HOLDER OR SIMILAR ARTICLE

John W. Mellgren, Rte. A, Box 108, Yellville, Ark. 72678

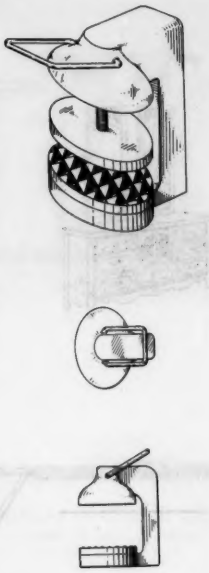
Filed Nov. 13, 1979, Ser. No. 93,901
Term of patent 14 years
Int. Cl.[3] D07—*06*
U.S. Cl. D7—70

265,279
HANDLE FOR A BEVERAGE CAN
Thomas E. Wright, 6340 Americana Dr., Clarendon Hills, Ill. 60514
Filed Sep. 10, 1980, Ser. No. 185,789
Term of patent 14 years
Int. Cl. D07—99
U.S. Cl. D7—70

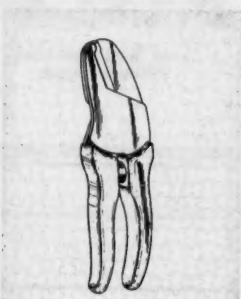


265,280
CANISTER RIM OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 7, 1980, Ser. No. 176,159
Term of patent 14 years
Int. Cl. D07—07
U.S. Cl. D7—129

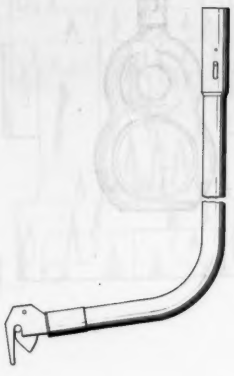
265,281
MEAT TENDERIZER
Margaret E. Bennett, 3376 Gramercy Ave., Ogden, Utah 84403
Filed Sep. 28, 1979, Ser. No. 79,757
Term of patent 14 years
Int. Cl. D07—04
U.S. Cl. D7—153



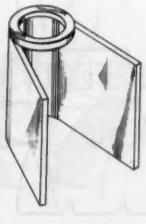
265,282
PRUNER
Christopher R. B. Harrison, Porthcawl, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, High Wycombe, England
Filed Feb. 21, 1980, Ser. No. 123,266
Claims priority, application United Kingdom, Aug. 29, 1979, 79991348
Term of patent 14 years
Int. Cl. D8—03
U.S. Cl. D8—5



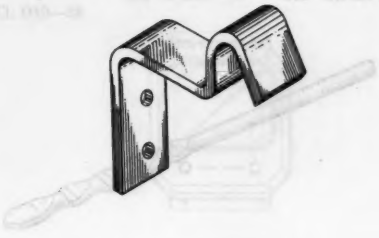
265,283
ASSEMBLY TOOL FOR REMOTE MANIPULATION OF LOCKING CONTAINER PINS
Elis Kallaes, and Karl-Erik Starell, both of Orsa, Sweden, assignors to Orsa Kättingfabrik AB, Orsa, Sweden
Filed Mar. 12, 1979, Ser. No. 19,603
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—89



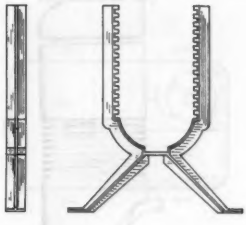
265,284
RETAINER FOR LATCHING PIN
Robert F. Woods, Woodbridge, and Ronald F. Bergstrom, Lodi, both of Calif., assignors to Agri-Fab Industries, Inc., Lodi, Calif.
Filed Jun. 10, 1980, Ser. No. 158,114
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—344



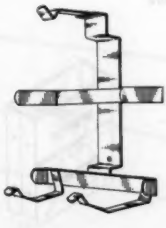
265,285
TRASH CAN HOLD DOWN BRACKET
Michael W. Englert, Jr., 1521 Ridge Dr., Redding, Calif. 96001
Filed Jun. 2, 1980, Ser. No. 155,390
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



265,286
LEG FOR RECREATIONAL VEHICLE AND MOBILE HOME HOSE SUPPORT
Robley H. Baldwin, P.O. Box 13286, South Lake Tahoe, Calif. 95702
Filed Jul. 30, 1979, Ser. No. 62,009
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356

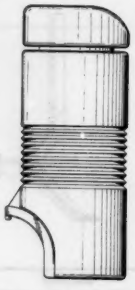


265,287
SUPPORT BRACKET FOR BIOMARINE BREATHING APPARATUS
Theodore Ziaylek, Jr., P.O. Box 292, Yardley, Pa. 19067
Filed Jul. 7, 1980, Ser. No. 166,430
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373

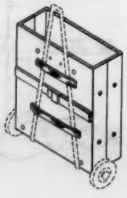


265,288
REFRACTORY ANCHOR FOR USE IN FURNACES OR THE LIKE
Douglas B. McLean, Centerville, Ohio, assignor to H. A. Jones Company Incorporated, Dayton, Ohio
Filed Mar. 31, 1980, Ser. No. 135,999
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—393

265,289
BELLOWED DISPENSING BOTTLE
Edward C. Kozlowski, Trumbull, Conn., assignor to Sterling Drug Inc., New York, N.Y.
Filed Jun. 6, 1980, Ser. No. 157,114
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—301

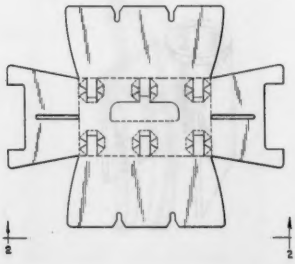


265,290
SHOPPING BAG
Frank Dolinsky, 572 Grand St., New York, N.Y. 10002
Filed May 17, 1979, Ser. No. 39,973
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—305

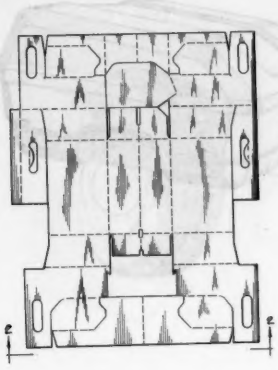


265,291
BOTTLE
Jerome Gould, Los Angeles County, Calif., assignor to Scotts Detergents, (A/Asia) Pty. Ltd., Sydney, Australia
Filed Feb. 5, 1979, Ser. No. 9,110
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—382

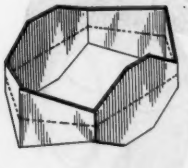
265,292
PROTECTIVE COVER FOR A BOTTLE CARRIER OR THE LIKE
Earl J. Killy, Monroe, La., assignor to Manville Service Corporation, Denver, Colo.
Filed Jul. 7, 1980, Ser. No. 166,428
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



265,293
ARTICLE CARRIER BLANK
Earl J. Graser, Monroe, and Jerry F. Wilson, West Monroe, both of La., assignors to Manville Service Corporation, Denver, Colo.
Filed Jul. 21, 1980, Ser. No. 170,484
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433

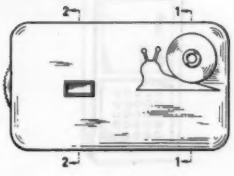


265,294
SLEEVE FOR CONNECTING CONTAINERS
John J. Austin, LaGrange, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 22, 1980, Ser. No. 114,193
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—434

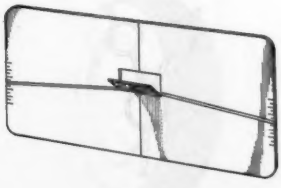


265,295
DIGITAL WRIST WATCH, OR THE LIKE
Masao Wada, Mitaka, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Division of Ser. No. 924,216, Jul. 12, 1978. This application Jul. 15, 1980, Ser. No. 169,224
Claims priority, application Japan, Feb. 10, 1978, 53-4374
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

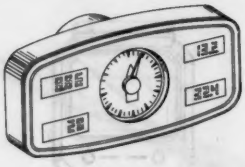
265,296
PACEMAKER FOR ATHLETIC SPORTS
Hiroshi Wanibuchi; Masayuki Moriya, and Yoshiro Yanagi, all of Sendai, Japan, assignors to Kabushiki Kaisha Sendai Seimitsu Zairyo Kenkyujho, Tokyo, Japan
Filed May 6, 1980, Ser. No. 147,270
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



265,297
CORD SLACK GAUGE
Harry Eisen, 16421 Chatsworth St., Granada Hills, Calif. 91344
Filed Jul. 10, 1980, Ser. No. 168,261
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



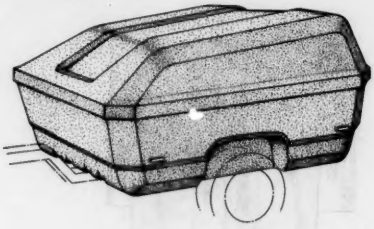
265,298
SAILBOAT INSTRUMENT DISPLAY PANEL
Donald M. Salisbury, Long Beach, Calif., assignor to Transdynamics, Inc., El Monte, Calif.
Filed Oct. 20, 1978, Ser. No. 953,838
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—98



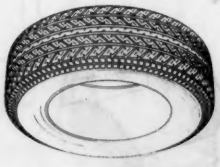
265,299
ALARM REPEATER
Michael G. Jaretsky, Sparta, N.J., assignor to Baker Industries, Inc., Parsippany, N.J.
Filed Aug. 13, 1979, Ser. No. 65,785
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

265,300
PENDANT SETTING FOR GEMS
Robert G. Musillo, 5481 Wolf Dr., Pittsburgh, Pa. 15236
Filed Jun. 9, 1980, Ser. No. 157,315
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—91

265,301
STORAGE CONTAINER MOUNTED ON AN AUTOMOBILE TRAILER
Walter W. Zander, 2241 Deepgrove Ave., Rowland Height, Calif. 91748
Filed May 2, 1980, Ser. No. 145,897
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



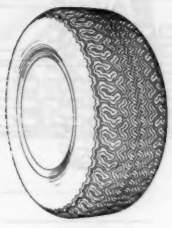
265,302
VEHICLE TIRE
Hiroshi Kojima, Hino, and Hideki Yokoyama, Musashino, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Oct. 14, 1980, Ser. No. 196,971
Claims priority, application Japan, Apr. 26, 1980, 55-16416
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—145



265,303
VEHICLE TIRE
Hideki Yokoyama, Murayama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 28, 1980, Ser. No. 154,178
Claims priority, application Japan, Nov. 29, 1979, 54-49739
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

265,304
VEHICLE TIRE
Hiroshi Kojima, Hino, and Toshihiko Yashima, Murayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 28, 1980, Ser. No. 154,179
Claims priority, application Japan, Nov. 29, 1979, 54-49735
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

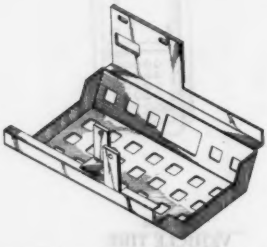
265,305
VEHICLE TIRE
Hiroshi Kojima, Hino, and Tatsurou Shimada, Fussa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 28, 1980, Ser. No. 154,181
Claims priority, application Japan, Nov. 29, 1979, 54-49734
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



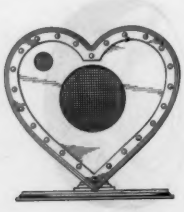
265,306
VEHICLE TIRE
Hiroshi Kojima, Hino, and Hideki Yokoyama, Murayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 28, 1980, Ser. No. 154,182
Claims priority, application Japan, Nov. 29, 1979, 54-49738
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

265,307
VEHICLE TIRE
Muneyoshi Maeda, Kodaira, and Masaru Abe, Sayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 28, 1980, Ser. No. 154,180
Claims priority, application Japan, Dec. 25, 1979, 54-54223
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—149

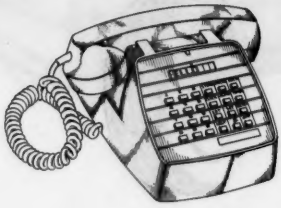
265,308
OIL PAN GUARD
John H. Zimmer, Jr., Maple Grove, Minn., assignor to Karrousel Racing Incorporated, Minneapolis, Minn.
Filed Jan. 14, 1980, Ser. No. 112,692
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—190



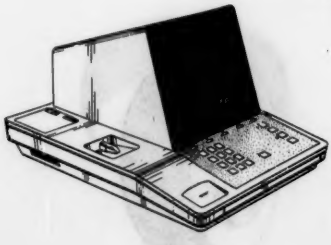
265,309
CABINET FOR A SPEAKER OR THE LIKE
John L. Glass, Rte. 1, Box 102, Boston, Ga. 31626
Filed Nov. 23, 1979, Ser. No. 96,828
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—31



265,310
TELEPHONE
Michael L. Kovens, Randallstown, Md., assignor to Universal Security Instruments, Inc., Owings Mills, Md.
Filed Jul. 24, 1979, Ser. No. 60,121
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



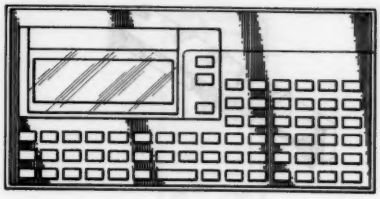
265,311
TELEPHONE DISPLAY SET BASE
Clifford D. Read, Almonte, and Donald T. Chadwick, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Oct. 22, 1979, Ser. No. 88,388
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—54



265,312
RADIO RECEIVER
Masanori Hamada, Yao, and Yoshiyuki Saigo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 30, 1980, Ser. No. 192,399
Claims priority, application Japan, Apr. 2, 1980, 55-13174
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70

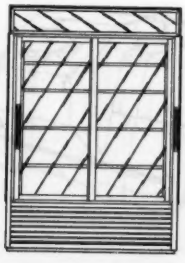
265,313
RADIO RECEIVER
Masanori Hamada, Yao, and Yoshiyuki Saigo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 30, 1980, Ser. No. 192,400
Claims priority, application Japan, Apr. 2, 1980, 55-13173
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70

265,314
INFORMATION INPUT AND OUTPUT MACHINE
Isao Kitai, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jan. 9, 1980, Ser. No. 110,785
Claims priority, application Japan, Jul. 19, 1979, 54-30383
Term of patent 14 years
Int. Cl. D14—*02;* D18—*01*
U.S. Cl. D14—100

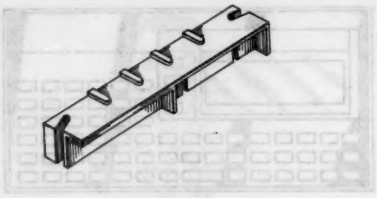


265,315
KEYBOARD CONSOLE
Kevin P. McKinsey, Scotts Valley, and Hugh M. Lee, Sunnyvale, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.
Filed Apr. 16, 1979, Ser. No. 30,270
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—102

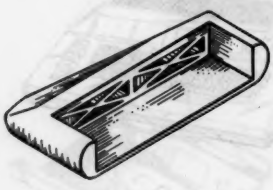
265,316
BEVERAGE COOLER
Arthur W. Trulaske, Frontenac, Mo., assignor to True Manufacturing Co., Inc., O'Fallon, Mo.
Filed Apr. 14, 1980, Ser. No. 140,091
Term of patent 14 years
Int. Cl.[3] D15—*07;* D6—*04*
U.S. Cl. D15—85



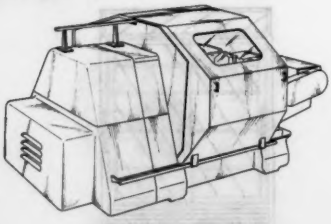
265,317
ABRADING ELEMENT SUPPORT STRUCTURE
Glenn A. Stertzbach, Getzville, N.Y., assignor to Vonscot Industries Incorporated, Clarence, N.Y.
Filed Nov. 30, 1978, Ser. No. 965,153
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



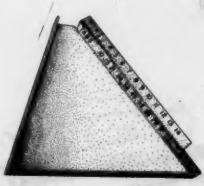
265,318
ABRADING ELEMENT SUPPORT STRUCTURE
Glenn A. Stertzbach, Getzville, N.Y., assignor to Vonscot Industries Incorporated, Clarence, N.Y.
Filed Dec. 11, 1978, Ser. No. 968,392
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



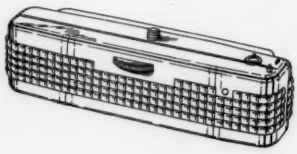
265,319
COMBINED LATHE AND SWARF COVER THEREFOR
Toshiaki Watanabe, Kasugai, and Norio Tanaka, Inuyama, both of Japan, assignors to Okuma Machinery Works Ltd., Nagoya, Japan
Filed Oct. 25, 1977, Ser. No. 845,455
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—130



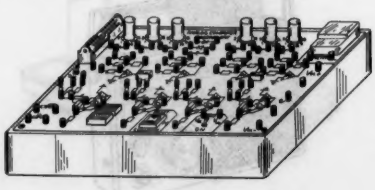
265,320
TABLET COUNTING TRAY
John C. Habenstein, 42 Cedar Brook Dr., Somerset, N.J. 08873
Filed Oct. 25, 1979, Ser. No. 88,007
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—140



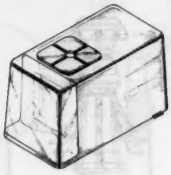
265,321
MOTOR WINDER FOR A CAMERA
Rolf Schreiber, Dresden, German Democratic Rep., assignor to Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, German Democratic Rep.
Filed Apr. 4, 1979, Ser. No. 27,139
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—10



265,322
EDUCATIONAL ELECTRONIC ANALOG COMPUTER LABORATORY
Edwin Z. Gabriel, 91 Mt. Tabor Way, Ocean Grove, N.J. 07756
Filed Mar. 21, 1979, Ser. No. 22,718
Term of patent 14 years
Int. Cl. D14—*02;* D19—*07*
U.S. Cl. D19—62

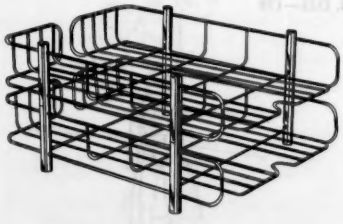


265,323
PENCIL SHARPENER
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Sep. 4, 1980, Ser. No. 184,439
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—73



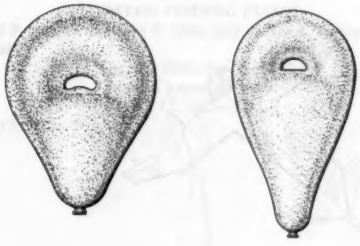
265,324
FELT PEN HOLDER
Peter M. Hedgeman, 10909 Morrison St. #6, North Hollywood, Calif. 91601
Filed Mar. 12, 1979, Ser. No. 19,445
Term of patent 3½ years
Int. Cl. D19—*06*
U.S. Cl. D19—85

265,325
LETTER TRAY
Beverly C. Rich, 1310 Maywood Ave., Ruxton, Md. 21204
Filed Mar. 31, 1980, Ser. No. 135,268
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92

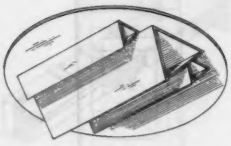


265,326
ELECTRONIC GAME HOUSING
Minoru Sugiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Aug. 1, 1980, Ser. No. 174,621
Claims priority, application Japan, Jun. 3, 1980, 55-22061
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

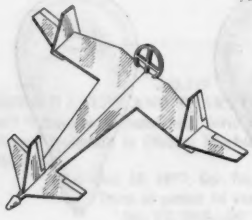
265,327
BALLOON
Tadao Okamoto, 4-20, 1-chome, Minami Ohtsuka, Toshima-ku, Tokyo, Japan
Filed Jun. 18, 1980, Ser. No. 160,840
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—84

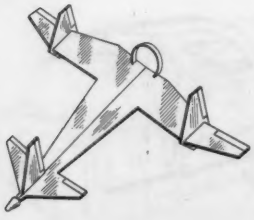


265,328
KITE
Masuo Ishida, 5750 N. Kenmore, Chicago, Ill. 60660
Filed Mar. 31, 1980, Ser. No. 117,146
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88



265,329
TOY GLIDER
George W. Craig, 1228 Randy, Irving, Tex. 75060
Filed May 21, 1980, Ser. No. 151,935
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88



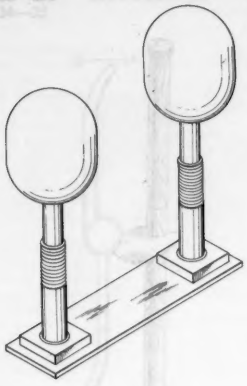


265,330
TOY FIGURE
George W. Lucas, Jr., San Anselmo; Ralph McQuarrie, Berkeley, and Joseph E. Johnston, Fairfax, all of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,461
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

265,331
TOY FIGURE
George W. Lucas, Jr., San Anselmo, and Ralph McQuarrie, Berkeley, both of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,464
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

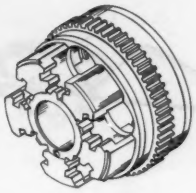
265,332
TOY FIGURE
George W. Lucas, Jr., San Anselmo; Ralph McQuarrie, Berkeley, and Joseph E. Johnston, Fairfax, all of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,462
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—178

265,333
KICK PUNCHING TARGET
Dae K. Lee, 413 B N. Raleight Ave., Atlantic City, N.J. 08401
Filed Apr. 28, 1980, Ser. No. 144,800
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—199



265,334
SPRING MOUNTED RIDING TOY
Roger J. Bollen, Willoughby Hills; William A. Erdos, Peninsula, and Roger H. Ramsey, Akron, all of Ohio, assignors to Eagle Rubber Co., Inc., Ashland, Ohio
Filed Jun. 30, 1980, Ser. No. 164,898
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—247

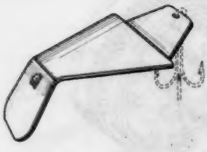
265,335
ROTOR
Robert G. Kirkpatrick, Shelburne, Vt., assignor to General Electric Company, Burlington, Vt.
Filed Apr. 7, 1980, Ser. No. 137,703
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



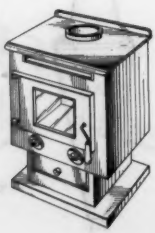
265,336
FISHING LURE
Robert E. Clauss, 5955 Fort Rd., Saginaw, Mich. 48601
Filed Aug. 28, 1979, Ser. No. 70,699
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

265,337
LIGHTED FISHING FLOAT
David P. Knight, and Don E. Sisk, both of Box 5, Kansas, Okla. 74347
Filed Aug. 22, 1980, Ser. No. 180,510
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

265,338
FISH LURE
William L. Selby, 10605 Altgeld, Melrose Park, Ill. 60164
Filed Jul. 16, 1980, Ser. No. 169,303
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



265,339
FREE STANDING FIREPLACE
Gary E. Baughman, Santa Rosa, Calif., assignor to Malm Fireplaces, Inc., Santa Rosa, Calif.
Filed Aug. 4, 1980, Ser. No. 174,881
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

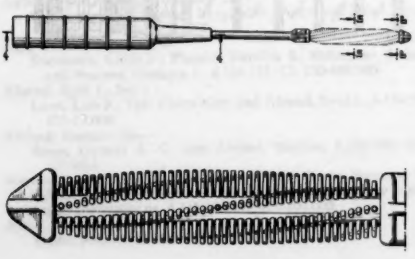


265,340
AIR RECIRCULATOR
Albert W. Kemp, 8291 Acacia, Cypress, Calif. 90630
Filed Jun. 23, 1980, Ser. No. 161,900
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

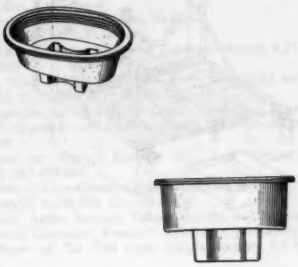
265,341
SEATING MANDREL ATTACHMENT FOR A DENTAL TOOL
Lonny J. Moore, Denver, and Lincoln P. Tague, Lakewood, both of Colo., assignors to Teledyne Densco, Div. of Teledyne Industries, Inc., Denver, Colo.
Filed Apr. 17, 1980, Ser. No. 141,003
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

265,342
CERVICAL DILATOR
Richard D. Glassman, 600 Southshore Dr., Miami Beach, Fla. 33141
Filed Jul. 18, 1980, Ser. No. 170,300
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—23

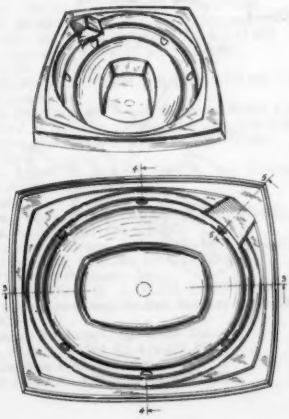
265,343
BONE PREPARATION BRUSH
William C. Schadrack, III, and William B. Clarke, both of Warsaw, Ind., assignors to Zimmer USA, Inc., Warsaw, Ind.
Filed Jan. 14, 1980, Ser. No. 111,747
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26



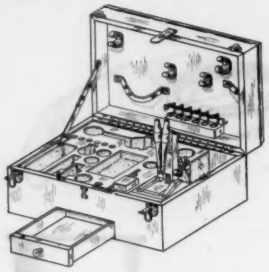
265,344
HYDROTHERAPY TUB
Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116
Filed Nov. 19, 1979, Ser. No. 95,205
Term of patent 14 years
Int. Cl. D24—*01*; D23—*02*; D25—*99*
U.S. Cl. D24—38



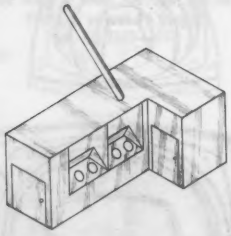
265,345
HYDROTHERAPY SPA
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jul. 25, 1980, Ser. No. 172,477
Term of patent 14 years
Int. Cl. D23—*02*; D24—*01*
U.S. Cl. D24—38



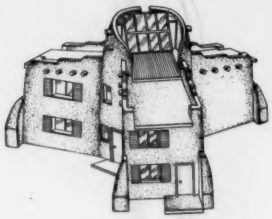
265,346
INSTRUMENT KIT FOR TREE PROBLEM DIAGNOSIS
Gary H. Maier, 2419 Easton Blvd., Des Moines, Iowa 50317
Filed Jun. 30, 1980, Ser. No. 164,678
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D24—99



265,347
DUST-CONTROL ROOM
Paul W. Klein; Nicholas J. Corbo, both of Cincinnati, Ohio, and Raymond T. O'Donnell, Grand Haven, Mich., assignors to Sun Chemical Corporation, New York, N.Y.
Filed Dec. 19, 1979, Ser. No. 105,265
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—1



265,348
SOLAR ADOBE
Ralph Mondragon, P.O. Box 199, Ranches of Taos, N. Mex. 87557
Filed Jul. 31, 1980, Ser. No. 174,048
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—33



265,349
BUILDING
Milton N. Zic, Chicago, Ill., assignor to D'Lites Restaurants, Inc., Knoxville, Tenn.
Filed Jul. 23, 1980, Ser. No. 171,399
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—34

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TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JULY, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Backstrom, Per-Ole; and Virolainen, Jorma, 4,338,147, Cl. 156-187.000.

A. H. Ross & Associates: *See*—
Eberts, Donald H., 4,338,285, Cl. 422-257.000.

A. T. Ramot Plastics Ltd.: *See*—
Kraus, Menahem A.; and Frommer, Moshe A., 4,338,190, Cl. 210-195.200.

Abbott Laboratories: *See*—
Kurath, Paul, 4,338,307, Cl. 424-180.000.
Kurath, Paul; and Fager, Earl E. C., 4,338,308, Cl. 424-180.000.
Kurath, Paul, 4,338,309, Cl. 424-180.000.

Abe, Shinji: *See*—
Hirata, Makizo; and Abe, Shinji, 4,337,733, Cl. 123-41.100.

Abe, Shinya: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

Abel, Alan S., to N P Marketing Corporation. Cargo retainer. 4,338,053, Cl. 410-94.000.

Abrahamson, Daniel P.; and Thomas, Paul M., to Builders Equipment Company. System for loading and unloading a kiln. 4,338,056, Cl. 414-152.000.

Acco Industries Inc.: *See*—
Sevrence, Warren E., 4,337,554, Cl. 24-115.00R.

Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Hot melt adhesive compositions containing a polystyrene resin. 4,338,414, Cl. 525-193.000.

Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Hot melt adhesive compositions containing an aromatic hydrocarbon resin. 4,338,415, Cl. 525-193.000.

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Ackermann, Peter: *See*—
Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.

Acme-Cleveland Corporation: *See*—
Rauckhorst, James E.; and Skingle, Thomas J., 4,337,677, Cl. 76-108.00A.

Acme Visible Records, Inc.: *See*—
Suling, Robert C.; Tomlinson, Charles W.; and Fields, Winfred G., 4,337,866, Cl. 209-656.000.

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Evans, Stephen F.; Ludwa, Raymond J.; and Adalsteinsson, Orn, 4,338,366, Cl. 428-76.000.

Adams, J. Howard, to Chevron Research Company. Additive composition for turbine oil. 4,338,207, Cl. 252-47.500.

Adell, Robert, to U.S. Product Development Co. Method of manufacturing a door edge guard. 4,338,148, Cl. 156-222.000.

Adrian, Werner. Anti-glare spectacles. 4,338,003, Cl. 351-45.000.

AG-Bag Corporation: *See*—
Johnson, William C.; Rasmussen, David H.; and Lee, Richard H., 4,337,805, Cl. 141-71.000.

Agarwal, Pawan K.; and Makowski, Henry S., deceased (by Makowski, Patricia Helen, executrix), to Exxon Research & Engineering Co. Hot melt adhesive compositions. 4,338,229, Cl. 524-399.000.

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Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

Agfa-Gevaert AG: *See*—
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,338,596, Cl. 340-636.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Himmelmann, Wolfgang; Bergthaller, Peter; and Sobel, Johannes, 4,338,394, Cl. 430-621.000.

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Stievenart, Emile F.; Plessers, Hendrik S.; Hellemans, Julianus J.; and Neujens, Georges J., 4,338,522, Cl. 250-468.000.

Ahmad, Syed I.: *See*—
Leon, Luis P.; Yeh, Chien-Kuo; and Ahmad, Syed I., 4,338,395, Cl. 435-17.000.

Ahmed, Haroon: *See*—
Jones, Geraint A. C.; and Ahmed, Haroon, 4,338,508, Cl. 219-121.0EJ.

Ainsworth, Anthony T.; and Smith, David G., to Beecham Group Limited. Ethanamine derivatives their preparation and use in pharmaceutical compositions. 4,338,333, Cl. 424-309.000.

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Smith, Stephen E., 4,337,582, Cl. 34-27.000.

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Davis, Michael, 4,337,853, Cl. 190-53.000.

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Arai, Hisaharu, 4,338,265, Cl. 261-39.00A.

Aisin Seiki Kabushiki Kaisha: *See*—
Kazaoka, Kenichi; Hirao, Koji; and Takahasi, Hideki, 4,337,978, Cl. 297-367.000.
Yamanaka, Minoru; Haneda, Hideo; Kato, Masatoshi; and Suzuki, Mitsuyuki, 4,337,794, Cl. 137-596.170.

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Gorike, Rudolf, 4,338,489, Cl. 179-1.00R.

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Akira, Abe; Kimura, Shoji; and Yoshinori, Miyawaki, to Omron Tateisi Electronics, Inc. Blood pressure measuring apparatus. 4,337,778, Cl. 128-680.000.

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Hosaka, Toshihiko; and Akiyama, Toru, 4,338,682, Cl. 369-44.000.

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Kjellin, Per G.; and Persson, Carl G. A., 4,338,319, Cl. 424-253.000.

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Alberino, Louis M.; and Regelman, Dale F., to Upjohn Company, The. Novel polyamides from ketene-aminals. 4,338,428, Cl. 528-73.000.

Albert Einstein College of Medicine of Yeshiva University: *See*—
Nagel, Ronald L.; and Raventos, Carmen E., 4,338,303, Cl. 424-129.000.

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Rasch, Walter; Caspers, Karl-Heinz; Wiebicke, Klaus; and Albert, Max, 4,337,736, Cl. 123-193.00H.

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Allied Corporation: *See*—
Briggs, James E., Jr.; and Hasegawa, Ryusuke, 4,338,131, Cl. 148-403.000.
Colasanti, Arduino; and Francis, Philip L., 4,337,906, Cl. 242-107.40A.
Fox, William R., 4,337,907, Cl. 242-107.700.
Yardley, James T.; Rosan, Alan M.; and Menger-Hammond, Eva L., 4,338,173, Cl. 204-162.00R.

Allis-Chalmers Canada Inc.: *See*—
Davenport, Joseph P., 4,338,058, Cl. 414-144.000.

Allis-Chalmers Corporation: *See*—
Backlin, Robert R.; and Berti, Jerome L., 4,337,954, Cl. 277-237.00R.
Brundage, Charles F., 4,337,781, Cl. 130-27.00H.
Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., 4,338,079, Cl. 432-14.000.
O'Dell, Leonard J., 4,338,105, Cl. 55-304.000.

Alps Electric Co., Ltd.: *See*—
Aoki, Masatsugu; and Iwane, Yasuhiko, 4,337,697, Cl. 101-93.480.

Alsthom Atlantique: *See*—
Euvrard, Jean-Paul; and Voisin, Gilles, 4,338,483, Cl. 174-28.000.

Alter, H. Ward, to Terradex Corporation. Low cost disposable radiation detecting apparatus. 4,338,523, Cl. 250-472.000.

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Hogsett, Robert F.; Huggins, Dale K.; and Beckstead, Leo W., 4,338,287, Cl. 423-53.000.

Ambe, Satoshi: *See*—
Akimune, Yoshio; Ambe, Satoshi; Takao, Hiroshi; and Kimura, Shinji, 4,338,356, Cl. 427-123.000.

Ambers, Paul J.; and Stevens, R. Barry, to Instrumentation Laboratory Inc. Fluid sampling. 4,338,280, Cl. 422-68.000.

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Floyd, Middleton B., Jr., 4,338,252, Cl. 260-408.000.
Tseng, Shin-Shyong; and Rauhut, Michael M., 4,338,213, Cl. 252-188.3CL.

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Corbin, Alan, 4,338,305, Cl. 424-177.000.

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Hopper, James A., 4,337,956, Cl. 277-29.000.

Ameron, Inc.: *See*—
Zimmerman, Heinz A. R., 4,338,153, Cl. 156-391.000.

Ames, William A., to Eastman Kodak Company. Emulsifiable polyolefin waxes prepared by reacting pivalolactone and a polyolefin wax containing carboxyl groups. 4,338,230, Cl. 549-263.000.

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Glass, Earl, 4,338,341, Cl. 426-231.000.
Weiss, Arnold A., 4,337,660, Cl. 73-600.000.

AMP Incorporated: *See*—
Asick, John C.; Landis, John M.; and Ritchie, Leon T., 4,337,989, Cl. 339-143.00R.
Hughes, Donald W. K.; and Lauterbach, John H. F., 4,337,574, Cl. 29-883.000.

Amstar Corporation: *See*—
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., 4,338,350, Cl. 426-658.000.

Amtrol: *See*—
Kirk, Kenneth L., 4,337,824, Cl. 165-70.000.

Analog Devices, Incorporated: *See*—
Tuthill, Michael G., 4,338,591, Cl. 340-347.0DA.

Anastasia, Robert W.: *See*—
Riuli, Arduino E.; Anastasia, Robert W.; and Kopacz, Bernard F., 4,338,267, Cl. 261-121.00R.

Anderson, James E., to Mid-America Body & Equipment Co. Cable reel handling apparatus for a vehicle. 4,338,059, Cl. 414-501.000.

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Anderson, Perry W.: *See*—
Glabe, Elmer F.; Anderson, Perry W.; and Lafsidis, Stergios, 4,338,336, Cl. 426-1.000.

Ando, Keikichi: *See*—
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,338,372, Cl. 428-336.000.

Ando, Kyoichi, to Nippon Steel Corporation; and Nittetsu Plant Designing Corporation. Apparatus for changing the charge distribution in a blast furnace. 4,337,928, Cl. 266-197.000.

Andrae, Rolf, to Robert Bosch GmbH. Apparatus for transferring tablet strip packages. 4,338,083, Cl. 493-239.000.

Antypas, George A.; Bell, Ronald L.; and Moon, Ronald L., to Varian Associates, Inc. Stacked multijunction photovoltaic converters. 4,338,480, Cl. 136-249.000.

Aoki, Masatsugu; and Iwane, Yasuhiko, to Alps Electric Co., Ltd. Serial printer. 4,337,697, Cl. 101-93.480.

Aoki, Satoshi: *See*—
Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.

Aono, Shigeo; and Takase, Sadao, to Nissan Motor Company, Limited. Data gathering system for automotive vehicles. 4,338,665, Cl. 364-424.000.

Aoyagi, Yoshiaki: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

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Apollo Technologies, Inc.: *See*—
Kestner, Mark O., 4,338,359, Cl. 427-230.000.

Arai, Hisaharu, to Aisan Industry Co., Ltd. Altitude compensation device. 4,338,265, Cl. 261-39.00A.

Arakawa, Toshiaki: *See*—
Toyoda, Tsunehiko; Matsumoto, Tokio; and Arakawa, Toshiaki, 4,338,133, Cl. 106-22.000.

Araki, Shigeo: *See*—
Chihara, Masao; Araki, Shigeo; and Asakawa, Kazuhiko, 4,338,510, Cl. 219-288.000.

Arano, Yasushi: *See*—
Yokoyama, Akira; and Arano, Yasushi, 4,338,248, Cl. 260-112.00R.

Arao, Kozo: *See*—
Hosono, Nagao; Kanbe, Junichiro; Arao, Kozo; and Miyake, Nobuyuki, 4,337,724, Cl. 118-652.000.

Arbit, Harold A., to Mobil Oil Corporation. Enhanced wettability of hope films. 4,338,420, Cl. 525-388.000.

Argyris, Pericles A.; and Williams, William R., to Sterling Faucet Company. Single lever mixing faucet. 4,337,795, Cl. 137-625.170.

Aristoff, Paul A., to Upjohn Company, The. Composition and process. 4,338,457, Cl. 560-119.000.

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Armour-Dial, Inc.: *See*—
Mast, Rolf, 4,338,294, Cl. 424-68.000.

Asahi Glass Company, Ltd.: *See*—
Kamimori, Tadatoshi; and Mizuhashi, Mamoru, 4,338,000, Cl. 350-357.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Tanaka, Yasuyuki; Takeda, Junichi; and Noguchi, Kohji, 4,338,404, Cl. 521-52.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Takahashi, Norimichi, 4,338,010, Cl. 354-152.000.

Asakawa, Kazuhiko: *See*—
Chihara, Masao; Araki, Shigeo; and Asakawa, Kazuhiko, 4,338,510, Cl. 219-288.000.

Ashton, Gregory J.: *See*—
Isalski, Wieslaw H.; and Ashton, Gregory J., 4,338,108, Cl. 62-22.000.

Asick, John C.; Landis, John M.; and Ritchie, Leon T., to AMP Incorporated. Electromagnetic shielded connector. 4,337,989, Cl. 339-143.00R.

Asmus, Jean-Pierre; Soto, Joseph; and Op Het Veld, Sebastianus J., to U.S. Philips Corporation. Video circuit with screen-burn-in protection. 4,338,623, Cl. 358-22.000.

Astec Industries, Inc.: *See*—
Brock, James D., 4,337,878, Cl. 222-1.000.

Atkinson, Alan W.; and Steer, Adrian M., to T and N Materials Research Limited. Process for the concentration of fibrous material. 4,337,863, Cl. 209-12.000.

Atlantic Richfield Company: *See*—
Wheaton, Gregory A., 4,338,462, Cl. 562-533.000.

Atwood Vacuum Machine Company: *See*—
Lyons, Dale E., 4,337,875, Cl. 220-368.000.

Audiotronics Video Display Division, Inc.: *See*—
Haider, Francis J.; and Kent, Allen R., 4,338,635, Cl. 358-254.000.

Aurora, The Old Second National bank of, executor: *See*—
Rhodes, Sammy J., deceased, 4,337,787, Cl. 137-101.000.

Austin, Robert R.; and Ginkel, Ernst R., to International Telephone and Telegraph Corporation. Natural gas calorimeter. 4,337,654, Cl. 73-190.0CV.

Axenko, Alexandr A.: *See*—
Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexandr A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.

B. F. Goodrich Company, The: *See*—
Garver, Richard F.; and Stevanovich, Srbo M., 4,338,051, Cl. 409-184.000.
Varga, Richard S., 4,337,721, Cl. 118-60.000.

Baba, Yasuharu: *See*—
Miyake, Masayuki; Sekino, Takeo; Takeda, Masashi; and Baba, Yasuharu, 4,338,619, Cl. 357-46.000.

Babbitt, William M., to Owens-Corning Fiberglas Corporation. Bushing for producing glass fibers. 4,338,110, Cl. 65-1.000.

Babcock Hitachi Kabushiki Kaisha: *See*—
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.

Babcock Product Engineering Ltd.: *See*—
Cleall, Alfred F., 4,337,898, Cl. 239-422.000.

Babcock & Wilcox Company, The: *See*—
Jabsen, Felix S., 4,337,827, Cl. 165-172.000.

Babler, Egon S., to Xerox Corporation. Print wheel positioning means. 4,338,034, Cl. 400-144.200.

Bachner, Frank J.: *See*—
Fan, John C. C.; and Bachner, Frank J., 4,337,990, Cl. 350-1.700.

Backlin, Robert R.; and Berti, Jerome L., to Allis-Chalmers Corporation. Wear sleeve oil seal. 4,337,954, Cl. 277-237.00R.

Backstrom, Per-Ole; and Virolainen, Jorma, to A. Ahlstrom Osakeyhtio. Method and apparatus for winding a web upon a core having a stripe of hot-melt adhesive. 4,338,147, Cl. 156-187.000.

Backus, John G. Synthetic woodwind instrument reed and method for its manufacture. 4,337,683, Cl. 84-383.00A.

Backx, Leo: *See*—
Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, 4,338,327, Cl. 424-269.000.

Badin, Gerard: *See*—
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Baessler, Konrad: *See*—
Habig, Kurt; Baessler, Konrad; Schulz, Lothar; and Schutte, Heinz, 4,338,473, Cl. 568-933.000.

Bailey, Joseph; and Cook, John, to Eastman Kodak Company. Heterocyclic magenta dye-forming couplers. 4,338,393, Cl. 430-386.000.

Baird, Thomas E. Device for testing the suction strength of an upright vacuum sweeper. 4,337,663, Cl. 73-700.000.

Baldwin-Gregg, Inc.: *See*—
Gregoire, Clyde G., 4,338,087, Cl. 493-425.000.

Ballard, Edward C., to Du Pont de Nemours, E. I., and Company. Ethylene copolymer blends and adhesives based thereon. 4,338,227, Cl. 524-143.000.

Banka, Eugene F.: *See*—
Sellen, Kenneth R.; Neill, Jimmie; Banka, Eugene F.; and Barz, William, 4,338,610, Cl. 346-75.000.

Banno, Taiichi: *See*—
Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, 4,338,279, Cl. 422-64.000.

Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., to Tecnomare, S.p.A. Control system for subsea well-heads. 4,337,829, Cl. 166-366.000.

Bardsley, Harold B.; Lear, Edward C.; and Jones, J. Robert, to Spencer Wright Industries, Inc. Detection of faults in sheet and like materials. 4,338,032, Cl. 356-431.000.

Barie, Walter P., Jr.; Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Photopolymerizable compositions. 4,338,171, Cl. 204-159.150.

Baril, James D.: *See*—
Raftopoulos, Demetrios D.; and Baril, James D., 4,337,773, Cl. 128-305.000.

Barna, Alex J. Compound bow. 4,337,749, Cl. 124-24.00R.

Barnowski, Henry G.: *See*—
Chandalia, Kiran B.; and Barnowski, Henry G., 4,338,407, Cl. 521-99.000.

Barth, Jerry J.; and Martin, Lawrence A., to Minnesota Mining and Manufacturing Company. Endless belt with automatic steering control. 4,337,598, Cl. 51-135.0BT.

Barton, Richard O.: *See*—
Miller, John M.; and Barton, Richard O., 4,338,031, Cl. 356-356.000.

Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, to Vysoka skola chemicko-technologicka. Process of and apparatus for producing a homogeneous radially confined plasma stream. 4,338,509, Cl. 219-121.0PR.

Barwell Machine and Rubber Group Limited: *See*—
Wielesiuk, Aleksander, 4,338,073, Cl. 425-115.000.

Barz, William: *See*—
Sellen, Kenneth R.; Neill, Jimmie; Banka, Eugene F.; and Barz, William, 4,338,610, Cl. 346-75.000.

Basiulis, Algerd, to Hughes Aircraft Company. Variable transmittance window. 4,337,998, Cl. 350-312.000.

Bastings, Leonardus C., deceased: *See*—
Lersmacher, Bernhard; van Kollenburg, Ludovicus W. J.; Bastings, Leonardus C., deceased; and de Haan, Friedrich J., administrator, 4,338,358, Cl. 427-227.000.

Bates Ventilsaekke Co. A/S: *See*—
Berthelsen, Ernst R., 4,338,084, Cl. 493-244.000.

Batesville Casket Company, Inc.: *See*—
Winburn, Charles F.; and Blankenship, Wallace P., 4,337,556, Cl. 27-2.000.

Battelle Development Corp.: *See*—
Wilkinson, William H., 4,337,625, Cl. 62-79.000.
Wilkinson, William H.; and Hanna, William T., 4,338,268, Cl. 261-140.00A.

Bauman, Ralph H., to Pneumo Corporation. Surface thermocouple assembly and method of making same. 4,338,479, Cl. 136-229.000.

Baxter, Robert; and Leach, Ronald W. A., to Shell Oil Company. Loosening agents for fruit of plants. 4,338,121, Cl. 71-118.000.

Baxter Travenol Laboratories, Inc.: *See*—
Olson, Raymond G., 4,337,769, Cl. 128-214.00F.

Bayer Aktiengesellschaft: *See*—
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,338,261, Cl. 260-508.000.
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,338,258, Cl. 260-456.00A.
Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, 4,338,409, Cl. 525-66.000.
Hildebrand, Dietrich; and Lohnert, Wolfgang, 4,338,093, Cl. 8-549.000.
Konig, Klaus; Reichmann, Wolfgang; and Schonfelder, Manfred, 4,338,431, Cl. 528-272.000.
Nolte, Wilfried; Keller, Wilfried; and Esser, Heinz, 4,338,238, Cl. 524-706.000.
Preiss, Michael; Konig, Hans-Bodo; Metzger, Karl G.; and Feyen, Peter, 4,338,434, Cl. 542-420.000.
Sanderson, John R.; Binsack, Rudolf; Fahnler, Friedrich; and Lindner, Christian, 4,338,406, Cl. 525-66.000.
Schaliner, Otto; Oeckl, Siegfried; and Schundehutte, Karl H., 4,338,262, Cl. 260-544.00S.
Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, 4,338,429, Cl. 528-196.000.
Stetter, Jorg; Ditgens, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.
von Bonin, Wulf, 4,338,412, Cl. 521-157.000.

Baylor, David R.; and Getter, Byron J., to Wolverine World Wide, Inc. Hog splitter. 4,337,550, Cl. 17-23.000.

BBC, Brown, Boveri & Company Ltd.: *See*—
Perego, Ambrogio, 4,337,951, Cl. 277-27.000.

Bear, Philip D.; and Burkhart, Gordon H., to McDonnell Douglas Corporation. Process for producing guided wave lens on optical fibers. 4,338,352, Cl. 427-8.000.

Beccegato, Leonardo: *See*—
Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., 4,337,829, Cl. 166-366.000.

Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., to Minnesota Mining and Manufacturing Company. Sulfonato-organosilanol compounds and aqueous solutions thereof. 4,338,377, Cl. 428-428.000.

Beck, Vernon D., to International Business Machines Corporation. Multiple beam cathode ray tube having reduced off-axis aberrations. 4,338,541, Cl. 313-411.000.

Becker, Floyd W.; and Regimbal, Richard R., to Drill Systems, Inc. Method of assembling multiple wall drill pipe. 4,337,563, Cl. 29-451.000.

Becker, Klaus; Cittrich, Jurgen; and Kaufmann, Karl E., to Mannesmann DeMag A.G. Turbulent-water way. 4,337,704, Cl. 104-70.000.

Beckers, Karl-Dieter: *See*—
Hoffken, Erich; and Beckers, Karl-Dieter, 4,337,897, Cl. 239-214.250.

Beckman Instruments, Inc.: *See*—
Hawkins, John J., 4,338,440, Cl. 544-110.000.

Beckstead, Leo W.: *See*—
Hogsett, Robert F.; Huggins, Dale K.; and Beckstead, Leo W., 4,338,287, Cl. 423-53.000.

Becton, Dickinson and Company: *See*—
Riuli, Arduino E.; Anastasia, Robert W.; and Kopacz, Bernard F., 4,338,267, Cl. 261-121.00R.

Beecham Group Limited: *See*—
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Behre, Horst: *See*—
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,338,261, Cl. 260-508.000.

Beisel, Hermann, to Heidelberger Druckmaschinen Aktiengesellschaft. Device for axially reciprocating an inking-unit roller. 4,337,699, Cl. 101-348.000.

Beitler, Richard S.; Sellers, Frederick J.; and Bennett, George W., to United States of America, National Aeronautics and Space Administration. Control means for a gas turbine engine. 4,338,061, Cl. 415-1.000.

Bell, Leonard: *See*—
Brooks, Arthur W.; Stevenson, Richard B.; and Bell, Leonard, 4,338,344, Cl. 426-461.000.

Bell, Ronald L.: *See*—
Antypas, George A.; Bell, Ronald L.; and Moon, Ronald L., 4,338,480, Cl. 136-249.000.

Bell Telephone Laboratories, Incorporated: *See*—
Briley, Bruce E., 4,338,676, Cl. 364-786.000.

Belt, James S.: *See*—
Bhattacharyya, Rabindra K.; and Belt, James S., 4,337,666, Cl. 73-818.000.

Bemm, Robert A. Combination campstove and lantern. 4,338,075, Cl. 431-344.000.

Ben-Gurion University of the Negev Research and Development Authority: *See*—
Trop, Moshe; and Livne, Avinoam, 4,338,347, Cl. 426-565.000.

Benajam, Alain C., to Le Materiel Biomedical. Light microscope with a plurality of slideways. 4,337,991, Cl. 350-87.000.

Bendix Corporation, The: *See*—
Henrich, Robert S., 4,338,651, Cl. 361-154.000.
Radcliffe, Charles R.; and Davis, James A., 4,337,647, Cl. 73-116.000.
Taplin, Lael B., 4,337,839, Cl. 180-179.000.

Bennett, George T., to General Motors Corporation. Multiple armature ring and spring mounting arrangement for electromagnetic friction-type clutches and brakes. 4,337,855, Cl. 192-84.00A.

Bennett, George W.: *See*—
Beitler, Richard S.; Sellers, Frederick J.; and Bennett, George W., 4,338,061, Cl. 415-1.000.

Bentvelzen, Jozef M., to Weyerhaeuser Company. Pulping in the presence of a protector. 4,338,158, Cl. 162-37.000.

Berge, Olav: *See*—
Rohm, Robert F.; and Berge, Olav, 4,337,865, Cl. 209-548.000.

Berger, Harvey L.; and Brandow, Charles R., to Sono-Tek Corporation. Ultrasonic fuel atomizer. 4,337,896, Cl. 239-102.000.

Bergman, Ronald B.: *See*—
Horste, Stephen C.; and Bergman, Ronald B., 4,338,519, Cl. 250-239.000.

Bergthaller, Peter: *See*—
Himmelmann, Wolfgang; Bergthaller, Peter; and Sobel, Johannes, 4,338,394, Cl. 430-621.000.

Bernasconi, Felix: *See*—
Zaengl, Walter S.; and Bernasconi, Felix, 4,338,561, Cl. 323-208.000.

Berthelot, Daniel; and Badin, Gerard, to S. A. Martin. Machine for producing single-face corrugated board. 4,338,154, Cl. 156-462.000.

Berthelsen, Ernst R., to Bates Ventilsaekke Co. A/S. Method for piling or stacking sacks or bags. 4,338,084, Cl. 493-244.000.

Berti, Jerome L.: *See*—
Backlin, Robert R.; and Berti, Jerome L., 4,337,954, Cl. 277-237.00R.

Bertolette, John E.: *See*—
Bertolette, Robert K.; and Bertolette, John E., 4,337,809, Cl. 144-193.00A.

Bertolette, Robert K.; and Bertolette, John E. Log Splitter. 4,337,809, Cl. 144-193.00A.

Bettin, Leonard A.; and Swanson, William C., to International Harvester Co. Self-leveling and height control hydraulic system. 4,337,959, Cl. 280-43.230.

Betts, Robert E., to United States of America, Army. Electroexplosive and percussion safe and arm device. 4,337,702, Cl. 102-254.000.

BFG Glassgroup: *See*—
Sadoune, Joseph; and Laroche, Pierre, 4,337,997, Cl. 350-310.000.

Bhattacharyya, Rabindra K.; and Belt, James S., to Owens-Corning Fiberglas Corporation. Method and apparatus for measuring the expansion of a mat of fibrous material. 4,337,666, Cl. 73-818.000.

Bi-Metal Corp.: *See*—
Williams, Robert M.; and Bielicki, Lucian C., 4,337,900, Cl. 241-14.000.

Biancale, Pierre; Corfa, Yves-Paul; Lemercier, Pierre; Moreau, Jean-Pierre; and Vertut, Jean, to Commissariat a l'Energie Atomique. Method for depositing material on the ocean bed and apparatus for performing the same. 4,338,043, Cl. 405-172.000.

Bielicki, Lucian C.: *See*—
Williams, Robert M.; and Bielicki, Lucian C., 4,337,900, Cl. 241-14.000.

Bienvenu, Gerard, to Extramet. Process for promoting physical and/or chemical reactions performed in a fluid medium. 4,338,169, Cl. 204-155.000.

Biermann, Peter; Storandt, Ralf; and Feucht, Rudi, to GEZE GmbH. Ski brake. 4,337,964, Cl. 280-605.000.

Binder, Ira; and Teass, Horace A., Jr., to McNab, Incorporated. All solid state electrode system. 4,338,175, Cl. 204-195.00R.

Binsack, Rudolf: *See*—
Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, 4,338,409, Cl. 525-66.000.
Sanderson, John R.; Binsack, Rudolf; Fahnler, Friedrich; and Lindner, Christian, 4,338,406, Cl. 525-66.000.

Bixby, James A., to Spin Physics, Inc. Apparatus for controlling exposure of a solid state image sensor array. 4,338,514, Cl. 250-201.000.

Blair, Charles M., Jr., to Magna Corporation. Method of recovering petroleum from a subterranean reservoir incorporating polyepoxide condensates of resinous polyalkylene oxide adducts and polyether polyols. 4,337,828, Cl. 166-274.000.

Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, to Bayer Aktiengesellschaft. Process for the preparation of 1-naphthylamine-4,6-disulphonic acid and 1-naphthylamine-2,4,6-trisulphonic acid. 4,338,261, Cl. 260-508.000.

Blankenship, Wallace P.: *See*—
Winburn, Charles F.; and Blankenship, Wallace P., 4,337,556, Cl. 27-2.000.

Blaschke, Felix; and Reng, Leonhard, to Siemens Aktiengesellschaft. Load state control for an asynchronous machine fed by a converter. 4,338,559, Cl. 318-805.000.

Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, to TIE/Communications, Inc. Electronic key telephone systems. 4,338,495, Cl. 179-99.00M.

Bloom, Terry R.; and Ellis, Marion E., to CTS Corporation. Apparatus and method for producing uniform fired resistors. 4,338,351, Cl. 427-8.000.

Bodewig, Frans G.: *See*—
Divisek, Jiri; Mergel, Jurgen; and Bodewig, Frans G., 4,338,167, Cl. 204-60.000.

Boeing Company, The: *See*—
Ozer, Theodore; Yankovoy, Alexander; and Imbessi, James, 4,338,050, Cl. 408-1.00R.
Sheppard, Clyde H., 4,338,225, Cl. 525-122.000.

Bogard, Stephen J.: *See*—
Katner, Allen S.; and Bogard, Stephen J., 4,338,452, Cl. 548-251.000.

Bol, Izya, to Xerox Corporation. Self-aligned Schottky metal semi-conductor field effect transistor with buried source and drain. 4,338,616, Cl. 357-15.000.

Bolen, Charles E.: *See*—
Marzocchi, Alfred; Bolen, Charles E.; Harrington, Edward R.; and Roberts, Michael G., 4,338,231, Cl. 523-214.000.

Bolton, Clifford. Method for combustion of petroleum and solid wastes. 4,337,711, Cl. 110-346.000.

Bolton, David H., to Imperial Chemical Industries Limited. Method and apparatus for the treatment of wastewater. 4,338,197, Cl. 210-621.000.

Bolz, Gunner; and DeForest, Sherman E., to International Remote Imaging Systems, Inc. Flow analyzer and system for analysis of fluids with particles. 4,338,024, Cl. 356-23.000.

Bonar, Thomas G. Self-closing double hinge. 4,337,548, Cl. 16-311.000.

Bonney, Roland W. Multiple four-way control valve. 4,337,796, Cl. 137-625.170.

Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., to Control Data Corporation. Unipotential lens assembly for charged particle beam tubes and method for applying correction potentials thereto. 4,338,548, Cl. 315-382.000.

Booth, William R. Means for releasably attaching strands. 4,337,913, Cl. 244-151.00B.

Borberg, Klaus: *See*—
Schlosser, Hermann; Zelder, Felix; Riedel, Rudolf; and Borberg, Klaus, 4,337,608, Cl. 53-471.000.

Borchert, Werner: *See*—
Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.

Borg-Warner Chemicals, Inc.: *See*—
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Halpern, Yuval, 4,338,246, Cl. 524-100.000.

Borg-Warner Corporation: *See*—
Greene, C. Roger, 4,337,628, Cl. 464-131.000.
Holdeman, John W., 4,337,675, Cl. 74-477.000.

Bornand, Jean D., to Swiss Aluminium Ltd. Method of purification of aluminium melts. 4,338,124, Cl. 75-68.00R.

Borowski, Kurt: *See*—
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,338,596, Cl. 340-636.000.

Borzym, John J. Die jaw members for tube cutoff apparatus. 4,337,680, Cl. 83-456.000.

Boschert, Incorporated: *See*—
Toy, Samson K., 4,338,658, Cl. 363-72.000.

Boschetti, Giovanni. Tongue and groove boards with spacers permitting expansion, and method of making the same. 4,337,607, Cl. 52-573.000.

Bottcher, Wolfgang: *See*—
Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.

Bottenbruch, Ludwig: *See*—
Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, 4,338,429, Cl. 528-196.000.

Bourgery, Guy R.: *See*—
Dostert, Philippe L.; Douzon, Colette A.; Bourgery, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.

Brackney, Maurice R.: *See*—
Martin, Richard G.; and Brackney, Maurice R., 4,338,526, Cl. 307-116.000.

Brand, Larry M., to Procter & Gamble Company, The. Non-nutritive sweetener. 4,338,346, Cl. 426-548.000.

Brandow, Charles R.: *See*—
Berger, Harvey L.; and Brandow, Charles R., 4,337,896, Cl. 239-102.000.

Brandt, Herman F., to General Motors Corporation. Diesel engine start of fuel injection detecting system. 4,337,650, Cl. 73-119.00A.

Brasier, Robert E., to Datagraphix, Inc. Linear beam scanning apparatus especially suitable for recording data on light sensitive film. 4,337,994, Cl. 350-3.710.

Braun, Robert E., to Burroughs Corporation. Hermetic integrated circuit package for high density high power applications. 4,338,621, Cl. 357-74.000.

Brembeck, Howard S.: *See*—
Van Gilst, Carl; Brembeck, Howard S.; and Donahoe, Bradley E., 4,337,728, Cl. 119-51.00R.

Brennan, Michael E.; and Speranza, George P., to Texaco Inc. Synthesis of N-(2-hydroxyethyl)piperazine. 4,338,443, Cl. 544-401.000.

Brent, Albert: *See*—
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.

Breslow, Jeffrey D.; Rosenwinkel, Donald A.; Hanson, Steven P.; and Harper, Rex M., to Marvin Glass & Associates. Game apparatus. 4,337,948, Cl. 273-237.000.

Bridgestone Tire Company Limited: *See*—
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Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.

Brienza, Michael J.; and Warner, Richard C., to Singer Company, The. Position encoder with column scanning and row sensing. 4,338,518, Cl. 250-237.00G.

Briggs, James E., Jr.; and Hasegawa, Ryusuke, to Allied Corporation. Nickel-boron binary amorphous alloys. 4,338,131, Cl. 148-403.000.

Briley, Bruce E., to Bell Telephone Laboratories, Incorporated. Asynchronous adder circuit. 4,338,676, Cl. 364-786.000.

Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, to Bayer Aktiengesellschaft. Fluorescent dyestuffs, processes for their preparation and their use as laser dyestuffs. 4,338,258, Cl. 260-456.00A.

Briscoe, Terry L., to ESCO Corporation. Pin locking assembly. 4,337,614, Cl. 59-86.000.

British Petroleum Company Limited, The: *See*—
Weeks, Brian, 4,338,150, Cl. 156-275.500.

British Steel Corporation: *See*—
Swaby, Harold, 4,338,060, Cl. 414-748.000.

Britton, John F.: *See*—
Hooper, John D.; and Britton, John F., 4,337,783, Cl. 131-375.000.

Broadway, Alexander R. W.; Rawcliffe, Gordon H., deceased (by Rawcliffe, Sheila M., executrix); and by Rawcliffe, Caroline S., executrix, to National Research Development Corporation. Pole-amplitude modulation, pole-changing electric motors and generators. 4,338,534, Cl. 310-184.000.

Brock, James D., to Astec Industries, Inc. Method of weighing and dispensing material from a surge bin. 4,337,878, Cl. 222-1.000.

Brockway, M. Clifford; and Walters, Craig T., to Liberty Glass Company. Laser treatment method for imparting increased mechanical strength to glass objects. 4,338,114, Cl. 65-28.000.

Brodzinski, John J.: *See*—
Murphy, John H.; Brodzinski, John J.; and Horton, Donald D., 4,337,859, Cl. 206-37.000.

Brooks, Arthur W.; Stevenson, Richard B.; and Bell, Leonard, to General Foods Corporation. Process for producing a quick-cooking rice. 4,338,344, Cl. 426-461.000.

Brooks, Charles R.: *See*—
Cook, Yale B.; and Brooks, Charles R., 4,337,775, Cl. 128-349.00B.

Brooks, Jeffrey B.: *See*—
Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., 4,338,614, Cl. 346-155.000.

Brooks, Stuart M.; and Fagan, Martin R., to Brooks, Stuart M. Trapped-key security unit. 4,337,987, Cl. 312-219.000.

Brouwer, Cornelis, to Rotaque (Proprietary) Limited. Railway hopper car bogie. 4,337,707, Cl. 105-250.000.

Brown, George N., to Westvaco Corporation. Two stage fluid bed regeneration of spent carbon. 4,338,198, Cl. 210-673.000.

Brown International Corporation: *See*—
Rohm, Robert F.; and Berge, Olav, 4,337,865, Cl. 209-548.000.

Brown, Kenneth W., to Compugraphic Corporation. Phototypesetting system and method. 4,338,673, Cl. 364-523.000.

Brown, Robert S.; Schwickert, Russell C.; and Demas, Nickolas, to McGraw-Edison Company. Lamp pressure checking device. 4,337,645, Cl. 73-52.000.

Brown, Royden. Pollen trap for beehives. 4,337,541, Cl. 6-4.00R.

Brown, Stanford M. System for handling and baling metallic scrap material. 4,337,694, Cl. 100-45.000.

Brundage, Charles F., to Allis-Chalmers Corporation. Roller support for cage sweep mechanism. 4,337,781, Cl. 130-27.00H.

Brunswick Corporation: *See*—
Erickson, Arnold R.; Panzera, Carlino; and Tolokan, Robert P., 4,338,380, Cl. 428-594.000.

Bryant, Michael D.: *See*—
Garcez, Joao D.; and Bryant, Michael D., 4,338,129, Cl. 75-130.00R.

Bubniak, William C.; and Mitchell, Harry R., to General Motors Corporation. Valve control mechanism. 4,337,738, Cl. 123-198.00F.
Buchele, Byron D., to H. J. Heinz Company. Method and apparatus for indexing containers to be labeled. 4,338,155, Cl. 156-539.000.
Buchmann, Hans, to Zuhlke Engineering AG. Method of preparing and processing receipts for customers of parking lots or the like. 4,337,890, Cl. 234-1.000.
Buchner, Daniel C., to Waltec, Inc. Filtering device. 4,337,790, Cl. 137-550.000.
Buffalo Forge Company: *See*—
Neal, Maynard J., 4,338,062, Cl. 415-213.00A.
Bufler, Ernst, to Volkswagenwerk Aktiengesellschaft. Driving device for automobiles, in particular all-terrain vehicles. 4,337,840, Cl. 180-233.000.
Builders Equipment Company: *See*—
Abrahamson, Daniel P.; and Thomas, Paul M., 4,338,056, Cl. 414-152.000.
Buono, Joseph. Apparatus for the handling and conditioning of snow. 4,337,586, Cl. 37-222.000.
Burgers, August, to Europatent S.A. Baseboard fastenable to a wall by a holder. 4,337,604, Cl. 52-287.000.
Burkett, Richard A. Precipitation hardening copper alloys. 4,338,130, Cl. 420-486.000.
Burkhart, Gordon H.: *See*—
Bear, Philip D.; and Burkhart, Gordon H., 4,338,352, Cl. 427-8.000.
Burroughs Corporation: *See*—
Braun, Robert E., 4,338,621, Cl. 357-74.000.
Korytkowski, Henry M.; and Dear, Frederick H., 4,338,671, Cl. 364-478.000.
Ragle, Herbert U., 4,337,659, Cl. 73-432.00R.
Sellen, Kenneth R.; Neill, Jimmie; Banka, Eugene F.; and Barz, William, 4,338,610, Cl. 346-75.000.
Burst, Francis J.: *See*—
Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., 4,338,485, Cl. 174-48.000.
Burton, Bruce L., to Dow Chemical Company, The. Urethane modified polymers having hydroxyl groups. 4,338,242, Cl. 523-436.000.
Bush, Eric L.; and Workman, Ernest J., to International Standard Electric Corporation. Coating powdered material. 4,338,354, Cl. 427-80.000.
Buss, Benjamin A.: *See*—
Buss, Randall D.; and Buss, Benjamin A., 4,338,088, Cl. 493-445.000.
Buss, Randall D.; and Buss, Benjamin A. Folding machine. 4,338,088, Cl. 493-445.000.
Cain, Paul A.; and Wheeler, Thomas N., to Union Carbide Corporation. Phenoxypyridinemethyl esters of 4-alkenoic acids. 4,338,326, Cl. 424-267.000.
Cairenius, Per R. W.: *See*—
Sundstrom, Inge B.; and Cairenius, Per R. W., 4,337,655, Cl. 73-193.00R.
Cali, William V. Brick clip-on hanger. 4,337,915, Cl. 248-489.000.
Cama, Lovji D.: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,338,437, Cl. 544-021.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,338,438, Cl. 544-21.000.
Cameron Iron Works, Inc.: *See*—
Parris, Joe P., 4,337,920, Cl. 251-357.000.
Canadian Patents & Development Limited: *See*—
Knaus, Edward E.; Corleto, Linda A.; and Redda, Kinfe, 4,338,445, Cl. 546-270.000.
Pelton, Arthur D.; and Rivier, Michel, 4,338,272, Cl. 264-86.000.
Canon Denshi Kabushiki Kaisha: *See*—
Shimada, Fumio; and Date, Nobuaki, 4,338,013, Cl. 354-234.000.
Canon Kabushiki Kaisha: *See*—
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.
Hosono, Nagao; Kanbe, Junichiro; Arao, Kozo; and Miyake, Nobuyuki, 4,337,724, Cl. 118-652.000.
Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, 4,338,035, Cl. 400-144.200.
Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, 4,338,012, Cl. 354-200.000.
Sato, Hideaki; Kitamura, Takashi; Masegi, Koichi; and Hoshito, Kazuo, 4,338,577, Cl. 372-36.000.
Sawada, Takamasa; Sone, Yoshiaki; and Tanaka, Kanou, 4,337,935, Cl. 271-9.000.
Shimada, Fumio; and Date, Nobuaki, 4,338,013, Cl. 354-234.000.
Suzuki, Kiyoshi; and Okano, Kazumi, 4,338,389, Cl. 430-94.000.
Yoshida, Syozo; and Tosaka, Yoichi, 4,338,014, Cl. 354-234.000.
Carl Still GmbH & Co. KG, Firma: *See*—
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,338,161, Cl. 202-228.000.
Carlier, Philippe & Melkye (H.K.) Limited: *See*—
Philippe, Gerard G., 4,337,595, Cl. 47-10.000.
Carlson, Clifford R.; Kotzan, Joseph M.; and Voelkle, Leo H., to General Motors Corporation. Idle air control apparatus for internal combustion engine. 4,337,742, Cl. 123-339.000.
Carlson, Lennart L.; and Hoiberg, Douglas I., to Steward Plastics, Inc. Two piece extruded hose. 4,337,800, Cl. 138-122.000.
Carlson, Ronald R., to Sico Incorporated. Yieldable multi-function linkage apparatus for powered pivoting loads. 4,337,670, Cl. 74-96.000.
Carmel, Fred. Clutch assembly. 4,338,064, Cl. 416-134.00R.
Carr, Paul L. 1., to Imperial Chemical Industries Limited. Process for the manufacture of polyester yarns. 4,338,275, Cl. 264-176.00F.
Carr, Paul L. 1., to Imperial Chemical Industries, Ltd. Process for the manufacture of polyamide yarns. 4,338,276, Cl. 264-176.00F.
Carrigan, Alfred C. Detachable wrench set organizer and storage unit. 4,337,860, Cl. 206-376.000.
Caruso, John T., to Moog Inc. Bimetallic valve spool. 4,337,797, Cl. 137-625.480.
Cascade Corporation: *See*—
Sifri, Elie C.; and Schmidt, Michael D., 4,337,692, Cl. 92-168.000.
Caspers, Karl-Heinz: *See*—
Rasch, Walter; Caspers, Karl-Heinz; Wiebicke, Klaus; and Albert, Max, 4,337,736, Cl. 123-193.00H.
Castle & Cooke, Inc.: *See*—
Hanacek, William A.; Kahl, James E.; and Mackenzie, Angus B., 4,337,594, Cl. 47-1.100.
Caterpillar Tractor Co.: *See*—
Dennis, Ronald E.; and Kizer, Richard W., 4,337,932, Cl. 269-23.000.
Grawey, Charles E., 4,337,814, Cl. 152-429.000.
Rhodes, Sammy J., deceased, 4,337,787, Cl. 137-101.000.
Cavaliere, Joseph R.; Horng, Cheng T.; Konian, Richard R.; Ruprecht, Hans S.; and Schwenker, Robert O., to International Business Machines Corporation. Process for fabricating a bipolar transistor. 4,338,138, Cl. 148-1.500.
Cavanagh, John R.; Cross, Kenneth R.; Clingman, David L.; and Schechter, Berton, to General Motors Corporation. Method for coating porous metal structure. 4,338,360, Cl. 427-247.000.
Caveney, Jack E., to Panduit Corp. Assembly post. 4,337,934, Cl. 269-77.000.
Cecil, James B.: *See*—
Connolly, Joseph J., Jr.; and Cecil, James B., 4,338,590, Cl. 340-347.0CC.
Celanese Corporation: *See*—
Dammann, Laurence G., 4,338,239, Cl. 524-549.000.
Edelman, Robert, 4,338,430, Cl. 528-222.000.
Mayerle, Leanne, 4,338,196, Cl. 210-610.000.
Chabala, Leonard V.; and Hall, Walter J., to S & C Electric Company. Anti-paralleling apparatus for high-voltage gear. 4,338,499, Cl. 200-50.00C.
Chafetz, Harry: *See*—
Hammond, Kenneth G.; and Chafetz, Harry, 4,338,206, Cl. 252-34.000.
Chamberlin, James W.: *See*—
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,338,315, Cl. 424-246.000.
Chamberlin, James W., both of: *See*—
Paget, Charles J.; Chamberlin, James W., both of; and Wikel, James H., 4,338,329, Cl. 424-270.000.
Champion International Corporation: *See*—
Sullivan, John; and Lillibridge, Harold R., 4,338,085, Cl. 493-254.000.
Chan, Ka-Kong; and Pawson, Beverly A., to Hoffmann-La Roche Inc. Fluorinated aromatic polyenes. 4,338,253, Cl. 260-408.000.
Chandalia, Kiran B.; and Barnowski, Henry G., to Olin Corporation. Stabilization of high resilience polyurethane foam. 4,338,407, Cl. 521-99.000.
Chang, Chau-Ting, to Institute of Nuclear Energy Research. Method for the preparation of uranium compounds via electrolytic amalgamation of uranium ion directly from an aqueous solution. 4,338,125, Cl. 75-84.000.
Charbonnages de France: *See*—
Delessard, Serge; and Puff, Roger M., 4,338,160, Cl. 201-1.000.
Merry, Jean-Louis, 4,338,104, Cl. 55-291.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
De Fazio, Thomas L., 4,337,579, Cl. 33-169.00C.
Chatzipetros, Johann; and Helten, Manfred, to Kernforschungsanlage Julich GmbH. Cryogenic pump and air sampler. 4,337,669, Cl. 73-863.110.
Chauffe, John A., to Koomey, Inc. Blowout preventer control and recorder system. 4,337,653, Cl. 73-151.000.
Chemische Fabriek Zaltbommel: *See*—
van der Maas, Hendrikus J. H., 4,338,254, Cl. 260-439.00R.
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., to Amstar Corporation. Crystallized, readily water-dispersible sugar product. 4,338,350, Cl. 426-658.000.
Chevillat, Pierre; and Schindler, Hans R., to International Business Machines Corporation. Arrangement for determining the optimum scan angle for printed documents. 4,338,588, Cl. 340-146.30H.
Chevron Research Company: *See*—
Adams, J. Howard, 4,338,207, Cl. 252-47.500.
Goodrich, Judson E., 4,338,137, Cl. 106-273.00R.
Chiappetti, Arthur B. Toll collection system. 4,338,587, Cl. 340-32.000.
Chidester, James R.: *See*—
Young, James E.; Walker, Ralph S.; and Chidester, James R., 4,337,770, Cl. 128-214.00R.
Chihara, Masao; Araki, Shigeo; and Asakawa, Kazuhiko, to TDK Electronics Co., Ltd. Electrode type steam vaporizer having corrosion resistant nickel ferrite electrodes and a protective cover. 4,338,510, Cl. 219-288.000.
Child, Edward T.: *See*—
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.
Children's Hospital Medical Center, The: *See*—
Jackson, Andrew C., 4,337,639, Cl. 73-3.000.

Chore-Time Equipment, Inc.: *See—*
Peppler, William; and Skinner, Mark, 4,337,729, Cl. 119-52.00B.
Van Gilst, Carl; Brembeck, Howard S.; and Donahoe, Bradley E., 4,337,728, Cl. 119-51.00R.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. Cephalosporin antibiotics. 4,338,437, Cl. 544-021.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. Cephalosporin antibiotics. 4,338,438, Cl. 544-21.000.
Chubb Panorama Limited: *See—*
Feathers, Leonard J., 4,337,766, Cl. 128-204.260.
Cia Penha de Maquinas Agricolas-Copemag: *See—*
Da Silva, Jose T., 4,337,782, Cl. 130-30.00E.
Ciba-Geigy Corporation: *See—*
Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.
Cincinnati Mine Machinery Company, The: *See—*
Krekeler, Claude B., 4,337,980, Cl. 299-91.000.
Cirella, Dominc. Liquid dispensing device. 4,337,806, Cl. 141-286.000.
Citizen Watch Co. Ltd.: *See—*
Nomura, Yasushi, 4,338,680, Cl. 368-29.000.
Cittrich, Jurgen: *See—*
Becker, Klaus; Cittrich, Jurgen; and Kaufmann, Karl E., 4,337,704, Cl. 104-70.000.
Clapper, Robert C., to DCI Marketing. Digital spring roll display device. 4,337,588, Cl. 40-10.00R.
Clark, Allen; and Konshak, Michael V., to Digital Equipment Corporation. Drive belt release mechanism for magnetic disk drives. 4,338,642, Cl. 360-97.000.
Clausen, Allan H. Vehicle securing device for frame straightening and repairing apparatus. 4,337,636, Cl. 72-457.000.
Cleall, Alfred F., to Babcock Product Engineering Ltd. Burner heads. 4,337,898, Cl. 239-422.000.
Clements, Anthony H.; and Leigh, Arthur G., to Lever Brothers Company. Bleach composition. 4,338,210, Cl. 252-96.000.
Clendaniel, W. Richard, to Ingersoll-Rand Company. Filter press with pivoting diverter doors. 4,337,695, Cl. 100-195.000.
Clingman, David L.: *See—*
Cavanagh, John R.; Cross, Kenneth R.; Clingman, David L.; and Schechter, Berton, 4,338,360, Cl. 427-247.000.
Cloarec, Laurent, to Regie Nationale des Usines Renault. Ball-and-socket joint for multiarticulate arm. 4,338,038, Cl. 403-56.000.
Coates, George R., to Schlumberger Technology Corporation. Apparatus and method for determination of bound water in subsurface formations. 4,338,567, Cl. 324-338.000.
Cohen, Allen L. Multifocal phase place. 4,338,005, Cl. 351-161.000.
Colasanti, Arduino; and Francis, Philip L., to Allied Corporation. Lock up mechanism for seat belt retractor. 4,337,906, Cl. 242-107.40A.
Colby, Dwight D.: *See—*
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.
College Research Corporation: *See—*
Evans, Marvin, 4,337,929, Cl. 266-248.000.
Commissariat a l'Energie Atomique: *See—*
Biancale, Pierre; Corfa, Yves-Paul; Lemercier, Pierre; Moreau, Jean-Pierre; and Vertut, Jean, 4,338,043, Cl. 405-172.000.
Nicolas, Gerard; Ponthenier, Gerard; and Turc, Gerard, 4,337,573, Cl. 29-831.000.
Schnedecker, Guy, 4,338,273, Cl. 264-167.000.
Commonwealth Scientific and Industrial Research Organization: *See—*
Moody, Keith; and Mole, Thomas, 4,338,477, Cl. 585-520.000.
Communications Satelite Corp.: *See—*
Rhodes, Smith A., 4,338,579, Cl. 332-21.000.
Compak Systems, Inc.: *See—*
Volkert, John K.; Penick, Ib; and Volkert, Robert B., 4,337,589, Cl. 40-124.100.
Compton, James C.: *See—*
Kuehnle, Manfred R.; and Compton, James C., 4,338,018, Cl. 355-8.000.
Compugraphic Corporation: *See—*
Brown, Kenneth W., 4,338,673, Cl. 364-523.000.
Conger, Steven J. Solar reflector and heat storage device. 4,337,754, Cl. 126-430.000.
Connolly, Joseph J., Jr.; and Cecil, James B., to National Semiconductor Corporation. Multi stage resistive ladder network having extra stages for trimming. 4,338,590, Cl. 340-347.0CC.
Continental Group, Inc., The: *See—*
Hoenig, James R.; and Mallorca, Salvador C., 4,337,874, Cl. 220-306.000.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Rach, Heinz-Dieter; and Pieper, Henner, 4,337,813, Cl. 152-209.00R.
Continental Pharma: *See—*
Gillet, Claude L.; Roba, Joseph L.; Snyers, Michel; Van Dorsser, William R.; and Lambelin, Georges E., 4,338,330, Cl. 424-273.00B.
Control Data Corporation: *See—*
Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., 4,338,548, Cl. 315-382.000.
Petrich, Dennis M., 4,338,569, Cl. 328-155.000.
Cook, Hilbert F., to Texas Industries, Inc. Microwave curing of cementitious material. 4,338,135, Cl. 106-97.000.
Cook, John: *See—*
Bailey, Joseph; and Cook, John, 4,338,393, Cl. 430-386.000.
Cook, Robert D.; and Skarvada, Thomas, to Crane Co. Initialization apparatus for a brake control system. 4,338,667, Cl. 364-426.000.
Cook, Robert D., to Crane Co. Modulator for anti-skid braking system. 4,338,668, Cl. 364-426.000.
Cook, Yale B.; and Brooks, Charles R., to Levine, Irving. Catheter drainage and protection unit. 4,337,775, Cl. 128-349.00B.
Cooperberg, Bruce: *See—*
Peck, Gene E.; and Cooperberg, Bruce, 4,338,016, Cl. 354-303.000.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Modified resins. 4,338,411, Cl. 525-145.000.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Polymer blends. 4,338,413, Cl. 525-179.000.
Corbin, Alan, to American Home Products Corporation. Use of LRH and LRH agonists. 4,338,305, Cl. 424-177.000.
Corfa, Yves-Paul: *See—*
Biancale, Pierre; Corfa, Yves-Paul; Lemercier, Pierre; Moreau, Jean-Pierre; and Vertut, Jean, 4,338,043, Cl. 405-172.000.
Corleto, Linda A.: *See—*
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Corporate Equipment Company: *See—*
Corso, Anthony B., 4,338,531, Cl. 307-540.000.
Correale, James V.: *See—*
Dawn, Frederic S.; and Correale, James V., 4,338,371, Cl. 428-283.000.
Corso, Anthony B., to Corporate Equipment Company. Slide wire device simulator circuit and method. 4,338,531, Cl. 307-540.000.
Cosden Technology, Inc.: *See—*
Mayes, Warden W., 4,338,096, Cl. 23-230.00A.
Coston, Jean A.: *See—*
Dostert, Philippe L.; Douzon, Colette A.; Bourgery, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.
Coulter, Lawrence: *See—*
Coulter, Nancey J.; and Coulter, Lawrence, 4,337,544, Cl. 114-357.000.
Coulter, Nancey J.; and Coulter, Lawrence. Sport fishing boat. 4,337,544, Cl. 114-357.000.
Coulter Systems Corporation: *See—*
Kuehnle, Manfred R.; and Compton, James C., 4,338,018, Cl. 355-8.000.
Cour, Francis R., to Coyne et Bellier, Bureau d'Ingenieurs Conseils. Method and apparatus for anchoring a line, such as a pipeline, to a support, and in particular a sea-bed. 4,338,045, Cl. 405-172.000.
Coury, Fred F.: *See—*
Kelley, James M.; and Coury, Fred F., 4,338,660, Cl. 364-200.000.
Covert, William J.; and Strickman, Melvyn B. Skateboard. 4,337,961, Cl. 280-87.04A.
Coviello, Frank A.: *See—*
Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, 4,338,495, Cl. 179-99.00M.
Coyne et Bellier, Bureau d'Ingenieurs Conseils: *See—*
Cour, Francis R., 4,338,045, Cl. 405-172.000.
CPC International Inc.: *See—*
Edwards, Larry W., 4,338,339, Cl. 426-96.000.
Crane Co.: *See—*
Cook, Robert D.; and Skarvada, Thomas, 4,338,667, Cl. 364-426.000.
Cook, Robert D., 4,338,668, Cl. 364-426.000.
Skarvada, Thomas, 4,338,669, Cl. 364-426.000.
Skarvada, Thomas, 4,338,670, Cl. 364-426.000.
Cremonesi, Pietro, to Italfarmaco S.p.A. Immobilization of enzymes. 4,338,401, Cl. 435-178.000.
Crisp, Peter N.: *See—*
Spadini, Gianfranco L.; Crisp, Peter N.; and McRitchie, Allan C., 4,338,204, Cl. 252-8.750.
Cross, Kenneth R.: *See—*
Cavanagh, John R.; Cross, Kenneth R.; Clingman, David L.; and Schechter, Berton, 4,338,360, Cl. 427-247.000.
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., to Texaco Inc. Process for the partial oxidation of slurries of solid carbonaceous fuels. 4,338,099, Cl. 48-197.00R.
Crum, Gerald W.: *See—*
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.
Cruz-Uribe, Antonio S., to Pitney Bowes Inc. Ink drop deflector. 4,338,613, Cl. 346-75.000.
CTS Corporation: *See—*
Bloom, Terry R.; and Ellis, Marion E., 4,338,351, Cl. 427-8.000.
Cunliffe, Frank: *See—*
Jefferson, John R.; and Cunliffe, Frank, 4,337,747, Cl. 123-501.000.
Curtin Matheson Scientific, Inc.: *See—*
Schenck, Robert, 4,337,988, Cl. 312-250.000.
Czekajewski, Jan A.; Hill, Harold L.; and Kober, Kenneth J. Animal activity monitor and behavior processor. 4,337,726, Cl. 119-1.000.
Dahl, Norman C. Solid externally threaded fasteners having greatly increased ductility. 4,338,054, Cl. 411-424.000.
Da Nippon Toryo Co., Ltd.: *See—*
Toyoda, Tsunehiko; Matsumoto, Tokio; and Arakawa, Toshiaki, 4,338,133, Cl. 106-22.000.
Daicel Chemical Industries, Ltd.: *See—*
Hashimoto, Kaname; and Ikeda, Saizo, 4,338,375, Cl. 428-412.000.
Daiichi Electric Co., Ltd.: *See—*
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Dalessio, Robert J.: *See—*
Harris, Richard G.; Dalessio, Robert J.; and Harman, Neil W., 4,338,513, Cl. 235-449.000.

Dallmann, Stephen H.: *See—*
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Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., to Telectronics Pty. Ltd. Impedance measuring pacer. 4,337,776, Cl. 128-419.0PT.

Dammann, Laurence G., to Celanese Corporation. Polyacrylate thickening agents. 4,338,239, Cl. 524-549.000.

Dandrea, Peter L., to Garden Green Vegetable Processors, Inc. Pepper coring and slicing apparatus. 4,337,693, Cl. 99-491.000.

Darnell, William R.: *See—*
Jackson, Winston J., Jr.; and Darnell, William R., 4,338,422, Cl. 525-461.000.

Das, Balbhadra; and Moore, L. Dow, to PPG Industries, Inc. Aqueous sizing composition and sized glass fibers and method. 4,338,233, Cl. 523-410.000.

Das, Balbhadra: *See—*
Moore, L. Dow; and Das, Balbhadra, 4,338,234, Cl. 523-206.000.

Da Silva, Jose T., to Cia Penha de Maquinas Agricolas-Copemag. Corn and cereal thrasher. 4,337,782, Cl. 130-30.00E.

Datagraphix, Inc.: *See—*
Brasier, Robert E., 4,337,994, Cl. 350-3.710.

Date, Nobuaki: *See—*
Shimada, Fumio; and Date, Nobuaki, 4,338,013, Cl. 354-234.000.

Daubenbuchel, Werner; and Thomas, Alfred, to Kautex-Maschinenbau GmbH. Apparatus for the manufacture of hollow bodies from a thermoplastic by the blow-moulding process. 4,338,071, Cl. 425-140.000.

Daussan, Andre: *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,337,930, Cl. 266-283.000.

Daussan et Compagnie: *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, 4,337,930, Cl. 266-283.000.

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Davenport, Joseph P., to Allis-Chalmers Canada Inc. Synchronized hopper gate. 4,338,058, Cl. 414-144.000.

David, Lloyd M., to E. F. David, Inc. System for pier underpinning of settling foundation. 4,338,047, Cl. 405-230.000.

Davidson, James D. Bushing, formed compressible insulation for insulating air space created by holes. 4,337,603, Cl. 52-220.000.

Davis, J. C. Pipe interior surface coating device. 4,337,723, Cl. 118-306.000.

Davis, James A.: *See—*
Radcliffe, Charles R.; and Davis, James A., 4,337,647, Cl. 73-116.000.

Davis, Michael, to Airway Industries, Inc. Cover for luggage case and method of making. 4,337,853, Cl. 190-53.000.

Davis, Noel: *See—*
Haub, John T.; Krassas, James G.; Rustad, Stanley C.; and Davis, Noel, 4,337,986, Cl. 308-177.000.

Davis, William F.; and Dotson, Robert N., to Motorola, Inc. Current limiting circuit. 4,338,646, Cl. 361-18.000.

Dawn, Frederic S.; and Correale, James V., to United States of America, National Aeronautics and Space Administration. Absorbent product to absorb fluids. 4,338,371, Cl. 428-283.000.

Day, Pierce B., to Eastman Kodak Company. Imaging apparatus. 4,338,021, Cl. 355-49.000.

Day, W. Baldwin: *See—*
Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., 4,338,602, Cl. 343-10.000.

DCI Marketing: *See—*
Clapper, Robert C., 4,337,588, Cl. 40-10.00R.

Dean, Earl E.; Quade, Marshall L.; and Temple, William F., to Massey-Ferguson Inc. Row crop unit. 4,337,612, Cl. 56-98.000.

Dear, Frederick H.: *See—*
Korytkowski, Henry M.; and Dear, Frederick H., 4,338,671, Cl. 364-478.000.

Debayeux, Christian; Lacroix, Hubert; and Sternicha, Felix, to Societe Chimique des Charbonnages. Apparatus for granulating and/or coating particles in a spouted bed. 4,337,722, Cl. 118-303.000.

Declitractor, Inc.: *See—*
Hotchkiss, Noel J., 4,337,577, Cl. 33-1.00N.

Deere & Company: *See—*
Steilen, Ronald M., 4,337,835, Cl. 172-560.000.

De Fazio, Thomas L., to Charles Stark Draper Laboratory, Inc., The. Deformable remote center compliance device. 4,337,579, Cl. 33-169.00C.

DeForest, Sherman E.: *See—*
Bolz, Gunner; and DeForest, Sherman E., 4,338,024, Cl. 356-23.000.

Degremont: *See—*
Louboutin, Robert, 4,338,202, Cl. 210-795.000.

de Haan, Friedrich J., administrator: *See—*
Lersmacher, Bernhard; van Kollenburg, Ludovicus W. J.; Bastings, Leonardus C., deceased; and de Haan, Friedrich J., administrator, 4,338,358, Cl. 427-227.000.

Dehaan, Peter H., to Eaton Corporation. Winch control. 4,337,926, Cl. 254-365.000.

Delalande S.A.: *See—*
Dostert, Philippe L.; Douzon, Colette A.; Bourgery, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.

Del Bianco, Matthew A.; and Tancredi, Henry J., to Du Pont de Nemours, E. I., and Company. Gripping arrangement for an apparatus for automatically laminating circuit boards. 4,338,152, Cl. 156-351.000.

Delessard, Serge; and Puff, Roger M., to Charbonnages de France. Process for drying and/or preheating coal. 4,338,160, Cl. 201-1.000.

DeLeu, Robert P., to Reliance Electric Company. Tapered bushing and hub assembly for sheaves, gears, sprockets, couplings and similar machine elements. 4,338,036, Cl. 403-16.000.

DelPercio, Michael J., to Intertherm Inc. Electric furnace for mobile and modular homes. 4,337,823, Cl. 165-48.00R.

DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., to Wisconsin Alumni Research Foundation. 1-Hydroxylation process. 4,338,250, Cl. 260-397.200.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Jorgensen, Neal A., to Wisconsin Alumni Research Foundation. Method for preventing parturient paresis in dairy cattle. 4,338,312, Cl. 424-236.000.

Demas, Nickolas: *See—*
Brown, Robert S.; Schwickert, Russell C.; and Demas, Nickolas, 4,337,645, Cl. 73-52.000.

Deminski, Richard M., to Yorde Machine Products Company, The. Multiple jackscrew rod to crosshead mounting. 4,338,037, Cl. 403-24.000.

Demonty, Guillermo A. Toenail. 4,338,039, Cl. 403-230.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Nabeta, Takeshi; Masui, Takeshi; and Hasegawa, Tsuguo, 4,338,378, Cl. 428-462.000.

Dennis, Ronald E.; and Kizer, Richard W., to Caterpillar Tractor Co. Safety device for a workpiece holder. 4,337,932, Cl. 269-23.000.

de Pingon, Pierre J. Articulated catamaran. 4,337,715, Cl. 114-121.000.

Desor, Gerhard, to Hauser Verwaltungs-Gesellschaft mit beschrankter Haftung. Thermo-pneumatic pump. 4,338,065, Cl. 417-207.000.

Despang, Hans-Guenter: *See—*
Kessler, Peter; Kaiser, Joachim; Keil, Wolfgang; Despang, Hans-Guenter; Haufe, Jurgen; and Kieser, Matthias, 4,337,903, Cl. 242-56.00A.

Deutsch, Leslie J.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,337,681, Cl. 84-1.240.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Polyphonic sliding portamento with independent ADSR modulation. 4,337,681, Cl. 84-1.240.

Deutsch, Volker: *See—*
Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.

Developak Corporation: *See—*
Evers, Jack R., 4,338,082, Cl. 493-190.000.

Dhainaut, Alain: *See—*
Regnier, Gilbert; Dhainaut, Alain; and Duhault, Jacques, 4,338,323, Cl. 424-266.000.

d'Hautecourt, Alain H.; and Tzakis, George J., to Zenith Radio Corporation. On screen color display. 4,338,624, Cl. 358-22.000.

Diamond Shamrock Corporation: *See—*
Solomon, Frank, 4,338,181, Cl. 204-294.000.

Diana, Michael. Disposable cooking utensils. 4,337,565, Cl. 29-509.000.

Dickinson, William B.: *See—*
Lesher, George Y.; and Dickinson, William B., 4,338,446, Cl. 546-314.000.

Dickson, Ronald; and Hampson, Michael R., to Marston Excelsior Limited. Electrode. 4,338,179, Cl. 204-284.000.

Diehl GmbH & Company: *See—*
Schoner, Hartmut, 4,337,703, Cl. 102-406.000.

Diermayer, Werner; and Kutzner, Luitpold. Draft control arrangement for vent of combustion apparatus. 4,337,892, Cl. 236-93.00R.

Digital Equipment Corporation: *See—*
Clark, Allen; and Konshak, Michael V., 4,338,642, Cl. 360-97.000.
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,338,663, Cl. 364-200.000.

Dilling, Peter, to Westvaco Corporation. Process for lowering the viscosity of sulfonated lignins. 4,338,091, Cl. 8-524.000.

Dillon, Peter L. P.; Edwards, Evan A.; and Spaulding, Richard A., to Eastman Kodak Company. Frame-rate converting film scanner with two-dimensional solid state image sensing array. 4,338,634, Cl. 358-214.000.

DiMatteo, Paul; Segnini, Robert; and Rademacher, Paul, to Solid Photography, Inc. Gauging system for machining surfaces. 4,337,566, Cl. 29-558.000.

Ditgens, Klaus: *See—*
Stetter, Jorg; Ditgens, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.

Divisek, Jiri; Mergel, Jurgen; and Bodewig, Frans G., to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method for increasing electrolytic efficiency of a fusion electrolysis with anodic oxygen generation. 4,338,167, Cl. 204-60.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Lapine, Anatole; and Schreiber, Reinhold, 4,337,976, Cl. 296-216.000.

Docutel Corporation: *See—*
McLean, Charles M., 4,337,864, Cl. 209-534.000.

Dodson, Stuart A.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,338,441, Cl. 544-211.000.

Dolby Laboratories, Inc.: *See—*
Dolby, Ray M., 4,338,684, Cl. 369-92.000.

Dolby, Ray M., to Dolby Laboratories, Inc. Scanning system for reproducing side-by-side optical sound tracks. 4,338,684, Cl. 369-92.000.

Donahoe, Bradley E.: *See—*
Van Gilst, Carl; Brembeck, Howard S.; and Donahoe, Bradley E., 4,337,728, Cl. 119-51.00R.

Doori, Hisashi, to Yoshida Kogyo K.K. Apparatus for supplying slide fastener sliders. 4,337,877, Cl. 221-171.000.

Dorner Mfg. Corp.: *See—*
Dorner, Wolfgang C., 4,337,856, Cl. 198-599.000.

Dorner, Wolfgang C., to Dorner Mfg. Corp. Transfer mechanism for a magnetic conveyor. 4,337,856, Cl. 198-599.000.

Doryokuro Kakunenryo Kahatsu Jigyodan: *See—*
Otsuka, Katsuyuki; and Miyo, Hiroaki, 4,338,102, Cl. 55-185.000.

Dostert, Philippe L.; Douzon, Colette A.; Bourgery, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., to Delalande S.A. 5-Hydroxymethyl oxazolidinones. 4,338,451, Cl. 548-232.000.

Dotson, Robert N.: *See—*
Davis, William F.; and Dotson, Robert N., 4,338,64t, Cl. 361-18.000.

Dotts, Robert L.: *See—*
United States of America, National Aeronautics and Space Administration; Dotts, Robert L.; and Holt, Jack W., 4,336,368, Cl. 428-212.000.

Dougherty, David J.; Gunesin, Binnur; and Spiewak, John W., to Firestone Tire & Rubber Company, The. Process for preparing diene-containing rubbers having improved green strength. 4,338,425, Cl. 526-216.000.

Dougherty, Frank I. Sailboat mast displacement system. 4,337,714, Cl. 114-90.000.

Dougherty, William R.: *See—*
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.

Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., to William H. Rorer, Inc. Triazinones. 4,338,441, Cl. 544-211.000.

Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel B.V.: *See—*
Tijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,338,109, Cl. 62-541.000.

Douzon, Colette A.: *See—*
Dostert, Philippe L.; Douzon, Colette A.; Bourgery, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.

Dow Chemical Company, The: *See—*
Burton, Bruce L., 4,338,242, Cl. 523-436.000.
Harris, Robert F.; Hoffman, Dwight K.; and Hickner, Richard A., 4,338,232, Cl. 523-414.000.
Johnson, Mark R., 4,338,162, Cl. 203-8.000.
Lane, George A.; and Rossow, Harold E., 4,338,208, Cl. 252-70.000.

Downing, Noel L., to General Motors Corporation. Fuel air ratio controlled fuel splitter. 4,337,616, Cl. 60-39.28R.

Drabek, Jozef: *See—*
Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.

Drabowitch, Serge, to Thomson-CSF. Conical scan antenna for tracking radar. 4,338,607, Cl. 343-754.000.

Dresser Industries, Inc.: *See—*
Kipp, Frederick M.; and Wetterhorn, Richard H., 4,337,664, Cl. 73-741.000.

Drew, Douglas, to Noma Canada Ltd. Extension cord reel set. 4,338,497, Cl. 191-12.400.

Drew, William D.: *See—*
Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., 4,338,485, Cl. 174-48.000.

Drill Systems, Inc.: *See—*
Becker, Floyd W.; and Regimbal, Richard R., 4,337,563, Cl. 29-451.000.

Drost, Jim L.; and Gordin, Myron K. Knife with retractable blade. 4,337,576, Cl. 30-162.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Carbamatesulfenyl-carbamoyl fluoride compounds. 4,338,450, Cl. 548-185.000.

DSO "Pharmachim": *See—*
Vesselinova-Jenkins, Chrisso K., 4,338,299, Cl. 424-92.000.

Ducasse, Joseph C. V., to Fabcon. Continuous separation system. 4,338,201, Cl. 210-771.000.

Duhault, Jacques: *See—*
Regnier, Gilbert; Dhainaut, Alain; and Duhault, Jacques, 4,338,323, Cl. 424-266.000.

Dungs, Horst: *See—*
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,338,161, Cl. 202-228.000.

Dunn, John C.: *See—*
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.

Du Pont de Nemours, E. I., and Company: *See—*
Ballard, Edward C., 4,338,227, Cl. 524-143.000.
Del Bianco, Matthew A.; and Tancredi, Henry J., 4,338,152, Cl. 156-351.000.
Hazan, Isidor, 4,338,235, Cl. 524-504.000.
Hazan, Isidor, 4,338,236, Cl. 524-320.000.
Hecht, James L.; and Yates, Paul C., 4,338,243, Cl. 524-287.000.
Nacci, George R.; and Pye, Donald G., deceased, 4,338,391, Cl. 430-122.000.
Saxton, Ronald L., 4,338,405, Cl. 525-62.000.
Strolle, Clifford H.; and Thornley, Glenn D., 4,338,379, Cl. 428-520.000.

Duranleau, Roger G., to Texaco Inc. Production of hydrogen-rich gas. 4,338,292, Cl. 423-656.000.

Duskin Franchise Co., Ltd.: *See—*
Motooka, Setsuzo; Karigane, Yukihiro; Yamazaki, Osamu; and Ochiai, Osamu, 4,338,282, Cl. 422-105.000.

Dutcher, Richard E., to Norton Company. Abrasion resistant diamond blade. 4,337,750, Cl. 125-15.000.

Dynacom International, Inc.: *See—*
Payne, Robert W.; and Smith, Wesley F., 4,338,628, Cl. 358-120.000.

Dzadzic, Peter M.: *See—*
Weil, Thomas A.; Dzadzic, Peter M.; Shih, Chien-Cheng J.; and Price, Michael C., 4,338,399, Cl. 435-99.000.

E. F. David, Inc.: *See—*
David, Lloyd M., 4,338,047, Cl. 405-230.000.

E. R. Squibb & Sons, Inc.: *See—*
Haugwitz, Rudiger D., 4,338,435, Cl. 544-13.000.

Eagar, Robert G., Jr.: *See—*
Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,338,454, Cl. 556-445.000.

Earl, Gary W.; and Hickman, Howard M., to Sherex Chemical Company, Inc. Stabilization of aqueous tertiary di-β-hydroxy amine oxides. 4,338,216, Cl. 252-311.000.

Early, Judson H.: *See—*
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Eastman Kodak Company: *See—*
Ames, William A., 4,338,230, Cl. 549-263.000.
Bailey, Joseph; and Cook, John, 4,338,393, Cl. 430-386.000.
Day, Pierce B., 4,338,021, Cl. 355-49.000.
Dillon, Peter L. P.; Edwards, Evan A.; and Spaulding, Richard A., 4,338,634, Cl. 358-214.000.
Jackson, Winston J., Jr.; and Darnell, William R., 4,338,422, Cl. 525-461.000.
Lee, James K., 4,338,009, Cl. 354-152.000.
Wu, Tai-Wing, 4,338,095, Cl. 23-230.00B.
Zannucci, Joseph S.; and Sublett, Bobby J., 4,338,247, Cl. 528-307.000.

Eaton Corporation: *See—*
Dehaan, Peter H., 4,337,926, Cl. 254-365.000.
Franz, Rudolph J., 4,337,818, Cl. 165-2.000.
Johnson, Oliver W., 4,337,620, Cl. 60-418.000.

Eberhardt, H. Alfred, to Hale Fire Pump Company. Pump assembly. 4,337,830, Cl. 169-24.000.

Eberts, Donald H., to A. H. Ross & Associates. Liquid-liquid contact apparatus. 4,338,285, Cl. 422-257.000.

Eck, Leonard F., to Kansas Jack, Inc. Target structure for use with an alignment apparatus. 4,337,581, Cl. 33-288.000.

Eck, Leonard F., to Kansas Jack, Inc. Line of sight wheel alignment apparatus for vehicles. 4,338,027, Cl. 356-155.000.

Eckert, Joachim; and Spirk, Franz, to Siemens Aktiengesellschaft. Synchronous turbine type electric motor. 4,338,537, Cl. 310-214.000.

Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Process for producing a glass preform for optical fiber. 4,338,111, Cl. 65-18.200.

Edelman, Robert, to Celanese Corporation. Preparation of polyimide compositions with cyclic peroxyketal catalyst. 4,338,430, Cl. 528-222.000.

Edgar, Brenton G.: *See—*
Morimoto, Keisuke; Edgar, Brenton G.; and Hirasuna, Thomas J., 4,338,340, Cl. 426-104.000.

Edwards, Evan A.: *See—*
Dillon, Peter L. P.; Edwards, Evan A.; and Spaulding, Richard A., 4,338,634, Cl. 358-214.000.

Edwards, Larry W., to CPC International Inc. Co-crystallization of dextrose and sucrose on cereal products. 4,338,339, Cl. 426-96.000.

Edwards, Thomas P., to FPT Industries. Inflatable ram. 4,337,921, Cl. 254-93.0HP.

Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexandr A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I. Apparatus for electrochemical purification of contaminated liquids. 4,338,178, Cl. 204-275.000.

Egami, Tetsufumi, to Shimano Industrial Company Limited. Jig for mounting a front derailleur in a bicycle. 4,337,933, Cl. 269-40.000.

Egger, Gerhard: *See—*
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,338,596, Cl. 340-636.000.

Ehret, Gordon F.; Rowley, William N.; and Mullen, Richard E., to Marley-Wylain Company, The. Liquid level detection circuit for control of liquid level responsive device. 4,338,546, Cl. 315-119.000.

Eibl, Heinz: *See—*
Hatz, Ernst; and Eibl, Heinz, 4,338,524, Cl. 290-2.000.

Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, to Canon Kabushiki Kaisha. Liquid jet recording head. 4,338,611, Cl. 346-75.000.

Eisai Co., Ltd.: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

Elahi, Nasik. Macroencapsulated immunosorbent assay technique. 4,338,094, Cl. 23-230.00B.

Electric Power Research Institute, Inc.: *See—*
Wendel, Richard C., 4,337,843, Cl. 181-175.000.

Eli Lilly and Company: *See—*
Herron, David K.; and Lunn, William H. W., 4,338,436, Cl. 544-16.000.
Herron, David K.; and Lunn, William H. W., 4,338,439, Cl 544-24.000.
Katner, Allen S.; and Bogard, Stephen J., 4,338,452, Cl. 548-251.000.
Krumkalns, Eriks V., 4,338,118, Cl. 71-76.000.
Miesel, John L., 4,338,321, Cl. 424-263.000.
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,338,315, Cl. 424-246.000.
Paget, Charles J.; Chamberlin, James W., both of; and Wikel, James H., 4,338,329, Cl. 424-270.000.
Tao, Eddie V. P.; and Staten, Gilbert S., 4,338,449, Cl. 548-140.000.

Ellis, Marion E.: *See—*
Bloom, Terry R.; and Ellis, Marion E., 4,338,351, Cl. 427-8.000.

Elmer, Otto C., to General Tire & Rubber Company, The. Tire cord adhesives. 4,338,263, Cl. 260-762.000.

Elms, Robert T.: *See—*
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Eltra Corporation: *See—*
Kern, Calvin V.; and Villano, James J., 4,337,596, Cl. 49-210.000.
Major, Jeffrey T., 4,338,538, Cl. 310-242.000.
Mattson, Richard W., 4,337,743, Cl. 123-396.000.
Rittenhouse, John F., 4,338,163, Cl. 204-2.100.

Empresa Nacional del Aluminio, S.A.- (ENDASA): *See—*
Garcia Pelaez, Jose', 4,338,176, Cl. 204-228.000.

Endowment and Research Foundation at Montana State University: *See—*
Myers, Lyle L., 4,338,298, Cl. 424-92.000.

Energy Savings Parhelion: *See—*
Flanders, Staunton O.; and Ness, William A., 4,337,893, Cl. 237-7.000.

Engel, Christopher M.; and Tzakis, George J., to Zenith Radio Corporation. One-chip chroma/luma IC: D.C. coupling reduction circuit. 4,338,630, Cl. 358-172.000.

Engel, Elton D. Identification card, sensor, and system. 4,338,025, Cl. 356-71.000.

Engel, Joseph C.: *See—*
Wilson, John T.; Wafer, John A.; Engel, Joseph C.; and Elms, Robert T., 4,338,647, Cl. 361-96.000.

Engel, Steven J.; Marsh, Richard E.; and Rhodes, Robert P., to Hewlett-Packard Company. Autocalibration of compressed A/D converter. 4,338,589, Cl. 340-347.0CC.

Engler, Edward M.; Kuptsis, John D.; Schad, Robert G.; and Tomkiewicz, Yaffa, to International Business Machines Corporation. Class of E-beam resists based on conducting organic charge transfer salts. 4,338,392, Cl. 430-270.000.

Engman, Thomas O. J., to Husqvarna Aktiebolag. Internal combustion engine. 4,337,748, Cl. 123-602.000.

Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

Epi Pneuma Systems S.p.A.: *See—*
Faldi, Giovanni, 4,338,042, Cl. 405-161.000.

Erickson, Arnold R.; Panzera, Carlino; and Tolokan, Robert P., to Brunswick Corporation. Method of attaching ceramics to metals for high temperature operation and laminated composite. 4,338,380, Cl. 428-594.000.

Erwied, Werner: *See—*
Worschech, Kurt; Wedl, Peter; Loffelholz, Frido; Wegemund, Bernd; and Erwied, Werner, 4,338,226, Cl. 524-302.000.

Escaron, Pierre C.; and Hoppe, Joachim A., to Schlumberger Technology Corp. Extension member for well-logging operations. 4,337,969, Cl. 285-24.000.

ESCO Corporation: *See—*
Briscoe, Terry L., 4,337,614, Cl. 59-86.000.

Esser, Heinz: *See—*
Nolte, Wilfried; Keller, Wilfried; and Esser, Heinz, 4,338,238, Cl. 524-706.000.

Estel Hoesch Werke AG: *See—*
Kopineck, Hermann J.; Botticher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.

Etchell, Gordon; and Frank, Cyril W., to Pathfinder Graphic Associates, Inc. Blanket cylinder construction for printing press. 4,337,700, Cl. 101-415.100.

Ethyl Corporation: *See—*
Jackisch, Philip F., 4,338,474, Cl. 570-105.000.

Etoh, Yukihiro: *See—*
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.

Eue, Ludwig: *See—*
Stetter, Jorg; Ditgens, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.

Europatent S.A.: *See—*
Burgers, August, 4,337,604, Cl. 52-287.000.

Euvrard, Jean-Paul; and Voisin, Gilles, to Alsthom Atlantique. Electrical power transmitting installation including a safety device for providing protection against the effects of electric arcs. 4,338,483, Cl. 174-28.000.

Evans, Marvin, to College Research Corporation. Rotary furnace for melting metal. 4,337,929, Cl. 266-248.000.

Evans, Stephen F.; Ludwa, Raymond J.; and Adalsteinsson, Orn, to Procter & Gamble Company, The. Surface wiping implement. 4,338,366, Cl. 428-76.000.

Evers, Jack R., to Developak Corporation. Positioning mechanism for support arm of heat sealing and cooling devices. 4,338,082, Cl. 493-190.000.

Ex-Cell-O Corporation: *See—*
Wersosky, John M.; and Wakefield, Frederick I., 4,338,100, Cl. 55-18.000.

Exchem Holdings Limited: *See—*
Murphy, John M.; and Spensley, Robert H., 4,338,048, Cl. 405-261.000.

Exploration Logging, Inc.: *See—*
Hall, Ronald A., 4,338,565, Cl. 324-206.000.

Extramet: *See—*
Bienvenu, Gerard, 4,338,169, Cl. 204-155.000.

Exxon Production Research Company: *See—*
Gunderson, Richard H., 4,337,970, Cl. 285-136.000.

Exxon Research & Engineering Co.: *See—*
Agarwal, Pawan K.; and Makowski, Henry S., deceased, 4,338,229, Cl. 524-399.000.
Flory, John F., 4,337,852, Cl. 188-375.000.
Guerre, Robert P., 4,338,188, Cl. 209-2.000.
Maa, Peter S.; Veluswamy, Lavanga R.; and Vadovic, Charles J., 4,338,184, Cl. 208-10.000.
Vernon, Lonnie W.; and Maa, Peter S., 4,338,182, Cl. 208-8.0LE.
Wisotsky, Max J., 4,338,205, Cl. 252-32.500.

Ezure, Yoji: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

F. Aoustin et Cie: *See—*
Lautrette, Jean-Claude; and Queyroix, Christian A., 4,338,193, Cl. 210-401.000.

F. F. Seeley Nominees Pty. Ltd.: *See—*
Seeley, Frederic F., 4,338,264, Cl. 261-29.000.

Fabcon: *See—*
Ducasse, Joseph C. V., 4,338,201, Cl. 210-771.000.

Fagan, Martin R.: *See—*
Brooks, Stuart M.; and Fagan, Martin R., 4,337,987, Cl. 312-219.000.

Fager, Earl E. C.: *See—*
Kurath, Paul; and Fager, Earl E. C., 4,338,308, Cl. 424-180.000.

Fahley, Jerome A.: *See—*
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.

Fahnler, Friedrich: *See—*
Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, 4,338,409, Cl. 525-66.000.
Sanderson, John R.; Binsack, Rudolf; Fahnler, Friedrich; and Lindner, Christian, 4,338,406, Cl. 525-66.000.

Falater, Scott L., to Zenith Radio Corporation. Remote control system for television monitors. 4,338,632, Cl. 358-194.100.

Faldi, Giovanni, to Epi Pneuma Systems S.p.A. Apparatus for the subaqueous entrenching of pipes. 4,338,042, Cl. 405-161.000.

Fan, John C. C.; and Bachner, Frank J., to Massachusetts Institute of Technology. Transparent heat-mirror. 4,337,990, Cl. 350-1.700.

Farago, Laszlo D., to Minnesota Mining and Manufacturing Company. Multiple magnification optical assembly. 4,338,022, Cl. 355-60.000.

Farge, Jean C.; and Fortin, Robert, to Noranda Mines Limited. Low alloy white cast iron. 4,338,128, Cl. 75-123.0CB.

Farkas, Daniel S., to Owens-Illinois, Inc. Starting safety control for a glassware forming machine. 4,338,115, Cl. 65-29.000.

Farmatis S.p.A.: *See—*
Scalesciani, Juan B. A., 4,338,331, Cl. 424-274.000.

Farmitalia Carlo Erba: *See—*
Pellegata, Renato; and Gandolfi, Carmelo, 4,338,249, Cl. 549-214.000.
Pellegata, Renato; and Gandolfi, Carmelo, 4,338,332, Cl. 424-305.000.

Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, to Ciba-Geigy Corporation. α-Prop-1-ynyl-3-phenoxybenzyl alcohols. 4,338,468, Cl. 568-637.000.

Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., to Allis-Chalmers Corporation. Method and apparatus for subjecting mineral particles to gas flow. 4,338,079, Cl. 432-14.000.

Feathers, Leonard J.; to Chubb Panorama Limited. Valves. 4,337,766, Cl. 128-204.260.

Fechko, George J.: *See—*
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.

Feldstein, Nathan. Process using activated electroless plating catalysts. 4,338,355, Cl. 427-98.000.

Felten & Guilleaume Carlswerk Aktiengesellschaft: *See—*
Voelker, Wolfgang; Schmitt, Alfons; and Radeck, Fritz, 4,337,725, Cl. 118-665.000.

Ferris, Michael J., to Marvin Glass & Associates. Playing piece propelling game device. 4,337,949, Cl. 273-324.000.

Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., to International Business Machines Corporation. Self-aligned semiconductor circuits and process therefor. 4,338,622, Cl. 357-92.000.

Feucht, Rudi: *See*—
Biermann, Peter; Storandt, Ralf; and Feucht, Rudi, 4,337,964, Cl. 280-605.000.

Feyen, Peter: *See*—
Preiss, Michael; Konig, Hans-Bodo; Metzger, Karl G.; and Feyen, Peter, 4,338,434, Cl. 542-420.000.

Fiedler, Howard C., to General Electric Company. Method of producing silicon-iron sheet material with annealing atmospheres of nitrogen and hydrogen. 4,338,144, Cl. 148-113.000.

Fields, Winfred G.: *See*—
Suling, Robert C.; Tomlinson, Charles W.; and Fields, Winfred G., 4,337,866, Cl. 209-656.000.

Firestone Tire & Rubber Company, The: *See*—
Dougherty, David J.; Gunesin, Binnur; and Spiewak, John W., 4,338,425, Cl. 526-216.000.

Firmenich SA: *See*—
Schulte-Elte, Karl-Heinrich, 4,338,458, Cl. 560-122.000.

Fischer, Herbert; Scheuermann, Fanny; Hase, Christian; and Krause, Horst-Jurgen, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Mild-to-the-skin anionic tensides of basic protein aminolysates preparations containing them, and their use. 4,338,214, Cl. 252-545.000.

Fischer, Manfred, to Geroh GmbH Mechanische Systeme. Apparatus for guiding and clamping flexible ropes and the like. 4,337,553, Cl. 24-68.00R.

Fishbein, Marvin: *See*—
Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., 4,338,548, Cl. 315-382.000.

Flanders, Staunton O.; and Ness, William A., to Energy Savings Parhelion. Multi-phase modular comfort controlled heating system. 4,337,893, Cl. 237-7.000.

Flatau, Abraham. Non-spinning projectile. 4,337,911, Cl. 244-3.100.

Flex-O-Lators, Inc.: *See*—
Mundell, Donald D.; and Gowing, John P., 4,337,931, Cl. 267-102.000.

Florent, Gerard: *See*—
Lobmann, Michele; and Florent, Gerard, 4,338,296, Cl. 424-89.000.

Flory, John F., to Exxon Research & Engineering Co. Load control link. 4,337,852, Cl. 188-375.000.

Flower, John W., to Research Products Corporation. Device for conditioning air with improved gas-liquid contact pad. 4,338,266, Cl. 261-94.000.

Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Descarboxy-1-ketoester (ketoacid)-prostaglandins. 4,338,252, Cl. 260-408.000.

Flueckiger, Rudolph H., to Rockford Carbide Corporation. Method of restoring an indexable cutting insert for reuse. 4,337,562, Cl. 29-402.110.

Flynn, Jean L. Door lock. 4,337,973, Cl. 292-290.000.

FMC Corporation: *See*—
Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,338,345, Cl. 426-532.000.

Foenard, Pierre, to Societe a Responsabilite Limitee: Societe de Developpement Pour l'Agriculture Sodelvage. Floor covering for stabling. 4,338,369, Cl. 428-235.000.

Food Technology Products: *See*—
Glabe, Elmer F.; Anderson, Perry W.; and Lafsidis, Stergios, 4,338,336, Cl. 426-1.000.

Ford Motor Company: *See*—
Holubka, Joseph W., 4,338,423, Cl. 525-511.000.

Forschungskommission des Sev und VSE fur (FKH): *See*—
Zaengl, Walter S.; and Bernasconi, Felix, 4,338,561, Cl. 323-208.000.

Fortin, Robert: *See*—
Farge, Jean C.; and Fortin, Robert, 4,338,128, Cl. 75-123.0CB.

Foseco International Limited: *See*—
Garcez, Joao D.; and Bryant, Michael D., 4,338,129, Cl. 75-130.00R.

Foster, Dean H.; and Silverman, Harold, to Pitney Bowes Inc. Envelope stuffing apparatus. 4,337,609, Cl. 53-569.000.

Fournier, Michel: *See*—
Granjon, Robert; and Fournier, Michel, 4,338,470, Cl. 568-723.000.

Fox, Roland T. V.: *See*—
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,338,318, Cl. 424-251.000.

Fox, William R., to Allied Corporation. Seat belt retractor with electrical switch. 4,337,907, Cl. 242-107.700.

FPT Industries: *See*—
Edwards, Thomas P., 4,337,921, Cl. 254-93.0HP.

Fraleigh, M. Foster. Oscillating rheometer die set. 4,337,646, Cl. 73-59.000.

Framatome: *See*—
Martin, Jean; and Jolly, Jacques, 4,338,159, Cl. 376-228.000.

Francis, Philip L.: *See*—
Colasanti, Arduino; and Francis, Philip L., 4,337,906, Cl. 242-107.40A.

Frank, Cyril W.: *See*—
Etchell, Gordon; and Frank, Cyril W., 4,337,700, Cl. 101-415.100.

Frankl, Gerald P. Method for recovering and recycling animal waste materials. 4,338,337, Cl. 426-55.000.

Franklin, James G.; and Rutter, Bernhard, to Societe d'Assistance Technique pour Produits Nestle S.A. Reincorporation of cocoa aroma. 4,338,349, Cl. 426-631.000.

Franklin, Peter J. Wire gripping device. 4,337,555, Cl. 24-249.00R.

Franz, Rudolph J., to Eaton Corporation. Vehicle temperature control system. 4,337,818, Cl. 165-2.000.

Freitag, Dieter: *See*—
Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, 4,338,429, Cl. 528-196.000.

Frey, Bernhard, to Hydrowatt Systems Limited. Seal for a cylinder-piston arrangement. 4,337,955, Cl. 277-12.000.

Frigoscandia AB: *See*—
Petersson, Tomas, 4,338,055, Cl. 414-114.000.

Fritts, David H., to United States of America, Air Force. Battery safety terminal. 4,338,382, Cl. 429-53.000.

Frommer, Moshe A.: *See*—
Kraus, Menahem A.; and Frommer, Moshe A., 4,338,190, Cl. 210-195.200.

Fromson, Howard A.; and Gracia, Robert F., to Fromson, Howard A. Apparatus and process for making lithographic printing plate with reinforced image. 4,338,007, Cl. 355-100.000.

Fuga, Georgy P.: *See*—
Krylov, Gleb L.; Stanovoi, Ivan V.; and Fuga, Georgy P., 4,337,679, Cl. 83-385.000.

Fugenschuh, Bernhard: *See*—
Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.

Fuji Photo Film Co., Ltd.: *See*—
Tadokoro, Eiichi, 4,338,643, Cl. 360-135.000.

Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Cue signal generating circuit. 4,338,529, Cl. 307-518.000.

Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Cue signal recording apparatus. 4,338,639, Cl. 360-66.000.

Fujii, Toshihiro; and Yokota, Sekiji, to Hayakawa Rubber Co., Ltd. Water proofing compositions for cement mortar or concrete. 4,338,224, Cl. 523-177.000.

Fujimori, Ryo: *See*—
Kato, Yutaka; and Fujimori, Ryo, 4,338,033, Cl. 356-444.000.

Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, to Takeda Chemical Industries, Ltd. Triisocyanates. 4,338,256, Cl. 260-453.00A.

Fujioka, Kotaro: *See*—
Saito, Isoo; and Fujioka, Kotaro, 4,338,277, Cl. 264-235.600.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Sato, Yoshinari, 4,338,322, Cl. 424-266.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,338,313, Cl. 424-246.000.

Fujita, Toshio; Matsumoto, Youichi; and Tagashira, Yoshimi, to Nippon Electric Co., Ltd. Carrier recovering circuit for phase modulated signal. 4,338,574, Cl. 331-1.00A.

Fujitsu Fanuc Limited: *See*—
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.
Kohzai, Yoshinori; Oyama, Shigeaki; and Katsuzawa, Yukio, 4,338,535, Cl. 310-186.000.
Kurakake, Mitsuo, 4,338,659, Cl. 364-170.000.

Fujitsu Limited: *See*—
Kawabe, Yunosuke, 4,338,620, Cl. 357-50.000.

Fujiwara, Naoki: *See*—
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.

Fukami, Akira: *See*—
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.

Fukuroi, Akio; and Sugimoto, Isao, to Yoshida Kogyo K.K.; and Nippon Dyeing Mfg. Co. Apparatus for treatment of materials. 4,337,631, Cl. 68-189.000.

Fukushima, Isao; Nishijima, Hideo; Satoh, Kenji; and Teshima, Tunehiko, to Hitachi, Ltd. Automatic gain control apparatus for a motor servo system. 4,338,554, Cl. 318-328.000.

Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., to Hill-Rom Company, Inc. Headwall unit for patient servicing and method for installation. 4,338,485, Cl. 174-48.000.

Fuller, Leonard B. Scrubber. 4,338,103, Cl. 55-259.000.

Funada, Fumiaki; Matsuura, Masataka; and Wada, Tomio, to Sharp Corporation. Fluorescent liquid crystal display compositions and devices. 4,337,999, Cl. 350-345.000.

Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, to Sony Corporation. Videodisc player with constant turntable velocity. 4,338,683, Cl. 369-50.000.

Furuta, Yoko: *See*—
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.

Gafert, Heinz-Joachim. Method of determining the proper individually given positions of dioptric portions on eyeglasses. 4,338,002, Cl. 351-39.000.

Gall, Martin, to Upjohn Company, The. Aminoalkyl-1,2,4-triazoles. 4,338,453, Cl. 548-263.000.

Galle, Kevin: *See*—
Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, 4,338,279, Cl. 422-64.000.

Gallen, Thomas. High speed rotary atomizers. 4,337,895, Cl. 239-7.000.

Gallop, Paul M.: *See*—
Korb, Donald R.; and Gallop, Paul M., 4,338,419, Cl. 525-350.000.

Gamo, Gotaro: *See*—
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.
Gandolfi, Carmelo: *See*—
Pellegata, Renato; and Gandolfi, Carmelo, 4,338,249, Cl. 549-214.000.
Pellegata, Renato; and Gandolfi, Carmelo, 4,338,332, Cl. 424-305.000.
Garagiola, Adelmo: *See*—
Palacino, Giovanni; Garzulano, Gianfranco; and Garagiola, Adelmo, 4,337,713, Cl. 112-153.000.
Garcez, Joao D.; and Bryant, Michael D., to Foseco International Limited. Production of vermicular graphite cast iron. 4,338,129, Cl. 75-130.00R.
Garcia Pelaez, Jose', to Empresa Nacional del Aluminio, S.A.- (ENDASA). System for generating and autocontrolling the voltage or current wave form applicable to processes for the electrolytic coloring of anodized aluminium. 4,338,176, Cl. 204-228.000.
Garden Green Vegetable Processors, Inc.: *See*—
Dandrea, Peter L., 4,337,693, Cl. 99-491.000.
Gardocki, Joseph F., to McNeilab, Inc. Analgesic potentiation. 4,338,324, Cl. 424-266.000.
Garrett Corporation, The: *See*—
LaCroix, Stephen R., 4,337,615, Cl. 60-39.14R.
Gartside, Robert J.; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Solids feeding device and system. 4,338,187, Cl. 208-127.000.
Garver, Richard F.; and Stevanovich, Srbo M., to B. F. Goodrich Company, The. Profile cutting machine. 4,338,051, Cl. 409-184.000.
Garwoli, Wolfgang N., to State of Victoria, The. Apparatus for determining properties of matter. 4,338,026, Cl. 356-73.000.
Garzulano, Gianfranco: *See*—
Palacino, Giovanni; Garzulano, Gianfranco; and Garagiola, Adelmo, 4,337,713, Cl. 112-153.000.
Gatsis, John G., to UOP Inc. Method of solvent extraction of coal by a heavy oil. 4,338,183, Cl. 208-10.000.
Gattu, Narahari, to Harnischfeger Corporation. Telescopic crane boom having rotatable extend/retract screws. 4,337,868, Cl. 212-267.000.
Gattu, Narahari: *See*—
Vaerk, Lembit; and Gattu, Narahari, 4,337,601, Cl. 52-118.000.
Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., to W. R. Grace & Co. Process for preparing chelating agents. 4,338,460, Cl. 562-448.000.
Gauthier, William K. Surgical retractor. 4,337,762, Cl. 128-20.000.
Gay, Michael J., to Motorola, Inc. Self balancing amplitude modulator. 4,338,580, Cl. 332-31.00T.
Gebo, George B. Power pulling arrangement. 4,337,924, Cl. 254-134.30R.
Gebruder Junghans GmbH: *See*—
Rapp, Egon; and Oertel, Heinrich, 4,338,681, Cl. 368-72.000.
Geer, James L.: *See*—
Rhoades, Rex V.; and Geer, James L., 4,338,563, Cl. 324-65.0CR.
Geissler, Ernst: *See*—
Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.
Gelbard, Martin K., to University Of California, The Regents Of The. Use of purified clostridial collangenase in the treatment of Peyronie's disease. 4,338,300, Cl. 424-94.000.
Gell, Harold A.; and Olszewski, Daniel P. Fishing lure system. 4,337,591, Cl. 43-42.090.
Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., to Motorola, Inc. Method of trimming thick film capacitor. 4,338,506, Cl. 219-121.0LJ.
Gemini Systems, Inc.: *See*—
Skow, Lynn R., 4,337,730, Cl. 122-20.00A.
General Dynamics, Convair Division: *See*—
Slysh, Paul, 4,337,560, Cl. 29-155.00R.
General Electric Company: *See*—
Fiedler, Howard C., 4,338,144, Cl. 148-113.000.
Logue, Harold W., 4,337,633, Cl. 72-94.000.
Pierce, Linden W., 4,337,569, Cl. 29-605.000.
Pierce, Linden W., 4,337,820, Cl. 165-11.00R.
Shaw, R. Howard; and Morehouse, Charles C., 4,338,521, Cl. 250-366.000.
Subbarao, Thallam, 4,338,648, Cl. 361-127.000.
General Engineering Radcliffe 1979 Limited: *See*—
Hill, Alan H., 4,338,274, Cl. 264-171.000.
General Foods Corporation: *See*—
Brooks, Arthur W.; Stevenson, Richard B.; and Bell, Leonard, 4,338,344, Cl. 426-461.000.
Morimoto, Keisuke; Edgar, Brenton G.; and Hirasuna, Thomas J., 4,338,340, Cl. 426-104.000.
General Mills, Inc.: *See*—
Haub, John T.; Krassas, James G.; Rustad, Stanley C.; and Davis, Noel, 4,337,986, Cl. 308-177.000.
General Motors Corporation: *See*—
Bennett, George T., 4,337,855, Cl. 192-84.00A.
Brandt, Herman F., 4,337,650, Cl. 73-119.00A.
Bubniak, William C.; and Mitchell, Harry R., 4,337,738, Cl. 123-198.00F.
Carlson, Clifford R.; Kotzan, Joseph M.; and Voelkle, Leo H., 4,337,742, Cl. 123-339.000.
Cavanagh, John R.; Cross, Kenneth R.; Clingman, David L.; and Schechter, Berton, 4,338,360, Cl. 427-247.000.
Downing, Noel L., 4,337,616, Cl. 60-39.28R.
Johnson, Lawrence P., 4,337,873, Cl. 220-204.000.
Lane, Ernest, Jr.; and Seekins, Raymond E., 4,337,621, Cl. 60-527.000.
Pomerantz, Allen J., 4,337,745, Cl. 123-440.000.
Stewart, John A.; and Nichols, Wayne C., 4,337,718, Cl. 116-34.00R.
General Tire & Rubber Company, The: *See*—
Elmer, Otto C., 4,338,263, Cl. 260-762.000.
Gerard, Thomas J.; and Gillmore, John E., Sr., to Weyerhaeuser Company. Reinforced half slotted container. 4,337,887, Cl. 229-16.00R.
Gerling, Paul, to Glyco-Maschinenbau GmbH. Pivoted shoe bearing. 4,337,985, Cl. 308-36.100.
Geroh GmbH Mechanische Systeme: *See*—
Fischer, Manfred, 4,337,553, Cl. 24-68.00R.
Gerry, Martin E. Fuel and water conditioner and method therefor. 4,337,732, Cl. 123-25.00B.
Gesellschaft fur Schwerionenforschung GmbH: *See*—
Spohr, Reimar, 4,338,164, Cl. 204-4.000.
Getter, Byron J.: *See*—
Baylor, David R.; and Getter, Byron J., 4,337,550, Cl. 17-23.000.
GEZE GmbH: *See*—
Biermann, Peter; Storandt, Ralf; and Feucht, Rudi, 4,337,964, Cl. 280-605.000.
Gidge, Kenneth N. Circular boomerang. 4,337,950, Cl. 273-426.000.
Giebel, Gerhard: *See*—
Lichtner, Emil; Ungeringer, Gerd; and Giebel, Gerhard, 4,337,735, Cl. 123-193.00H.
Gilbert, Walter; and Talmadge, Karen, to President and Fellows of Harvard College. Mature protein synthesis. 4,338,397, Cl. 435-68.000.
Gill, Jasbir S.; and Nancollas, George H., to Research Foundation of State University of New York, The. Method for inhibiting the formation of scale. 4,338,363, Cl. 427-387.000.
Gill, Thomas E., to Killark Electric Manufacturing Co. Panel board safety latch assembly. 4,337,972, Cl. 292-67.000.
Gillespie, John W., to Jodon Engineering Associates, Inc. Dual probe coupler. 4,337,648, Cl. 73-117.300.
Gillet, Claude L.; Roba, Joseph L.; Snyers, Michel; Van Dorsser, William R.; and Lambelin, Georges E., to Continental Pharma. Benzimidazole derivatives, their use, and compositions containing these derivatives. 4,338,330, Cl. 424-273.00B.
Gillette Company, The: *See*—
Highley, Derek R.; and Sane, Jayant N., 4,338,295, Cl. 424-71.000.
Trotta, Robert A., 4,337,575, Cl. 30-47.000.
Gillmore, John E., Sr.: *See*—
Gerard, Thomas J.; and Gillmore, John E., Sr., 4,337,887, Cl. 229-16.00R.
Ginkel, Ernst R.: *See*—
Austin, Robert R.; and Ginkel, Ernst R., 4,337,654, Cl. 73-190.0CV.
Gist-Brocades N.V.: *See*—
Tan, Hong S.; and Smink, Dirk A., 4,338,342, Cl. 426-308.000.
Glabe, Elmer F.; Anderson, Perry W.; and Lafsidis, Stergios, to Food Technology Products. Animal feeds for herbivorous animals. 4,338,336, Cl. 426-1.000.
Glasl, Johann: *See*—
Wegener, Ingo; Glasl, Johann; and Werdehausen, Achim, 4,338,212, Cl. 252-174.220.
Glass, Earl, to AMF Incorporated. Stiff dough make-up machine and method of using same. 4,338,341, Cl. 426-231.000.
Glyco-Maschinenbau GmbH: *See*—
Gerling, Paul, 4,337,985, Cl. 308-36.100.
Goerss, William G., to N L B Corp. Method for cleaning floor surfaces with high pressure water jets. 4,337,784, Cl. 134-34.000.
Goodrich, Judson E., to Chevron Research Company. Asphalt composition for air-blowing. 4,338,137, Cl. 106-273.00R.
Goodyear Aerospace Corporation: *See*—
Suter, Charles A., 4,338,370, Cl. 428-250.000.
Goossens, John: *See*—
Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, 4,338,429, Cl. 528-196.000.
Gordin, Myron K.: *See*—
Drost, Jim L.; and Gordin, Myron K., 4,337,576, Cl. 30-162.000.
Gordon, Roy G., to Gordon, Roy G. Photovoltaic cell. 4,338,482, Cl. 136-256.000.
Gorike, Rudolf, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Headphone construction. 4,338,489, Cl. 179-1.00R.
Goto, Jiro: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,338,313, Cl. 424-246.000.
Goullet, Pierre; and Scotte, Pierre, to APC-Azote et Produits Chimiques, S.A. Method of making fast-breaking bituminous emulsions. 4,338,136, Cl. 106-273.00N.
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Gowing, John P.: *See*—
Mundell, Donald D.; and Gowing, John P., 4,337,931, Cl. 267-102.000.
Gracia, Robert F.: *See*—
Fromson, Howard A.; and Gracia, Robert F., 4,338,007, Cl. 355-100.000.
Gradco/Dendoki, Inc.: *See*—
Lawrence, Frederick J., 4,337,936, Cl. 271-293.000.
Graf zu Munster, Ludbert, to Handelskontor Ludbert Graf zu Munster GmbH & Co. Process for binding waste liquor or sludge. 4,338,134, Cl. 106-85.000.

Grafenschnell, Horst, to Siemens Aktiengesellschaft. Electric machine excited by permanent magnets. 4,338,533, Cl. 310-154.000.

Graham, Bruce C., to Magnaflux Corporation. Magnetic particle method using water soluble adhesive for detecting flaws in magnetizable workpieces. 4,338,566, Cl. 324-216.000.

Graham, Charles P.: *See*—
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., 4,338,350, Cl. 426-658.000.

Grandcolas, Jean; Harmelin, Guy; Lazzarini, Roger; and Reverchon, Bernard, to Lafarge Conseils et Etudes. Seal assembly for a rotary kiln. 4,338,080, Cl. 432-115.000.

Granjon, Robert; and Fournier, Michel, to Rhone-Poulenc Industries. Solid bisphenol F particulates. 4,338,470, Cl. 568-723.000.

Granlund, Lars A., to Nitro Nobel AB. Method of manufacturing emulsion explosive insensitive to a 8 detonator. 4,338,146, Cl. 149-109.600.

Grater, Wolfgang: *See*—
Pilz, Karl-Heinz; Grater, Wolfgang; and Mayer, Hans-Dietrich, 4,338,552, Cl. 318-266.000.

Grawey, Charles E., to Caterpillar Tractor Co. Air valve conduit in the track wall of a tire. 4,337,814, Cl. 152-429.000.

Gray, Samuel A., to Pacific Controls Incorporated. Arc prevention and detection electrical discharge machine servo control system. 4,338,504, Cl. 219-69.00M.

Greene, C. Roger, to Borg-Warner Corporation. Universal joint with unitary face seal and retainer assembly. 4,337,628, Cl. 464-131.000.

Greenfield, Stuart T. Alternating piston machine with rotating end walls and chain drive. 4,338,067, Cl. 418-37.000.

Gregoire, Clyde G., to Baldwin-Gregg, Inc. Combined web jaw and bight stripper. 4,338,087, Cl. 493-425.000.

Gregory, Clarence T. Reversible grappling anchor. 4,337,717, Cl. 114-294.000.

Gregory, James E. Bracket structure, especially for carrying corral sections on a vehicle or the like. 4,337,918, Cl. 248-201.000.

Greidanus, Pieter J.: *See*—
Heslinga, Adolf; and Greidanus, Pieter J., 4,338,417, Cl. 525-197.000.

Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., to United States of America, Energy. Method for producing a fuel cell manifold seal. 4,337,571, Cl. 29-623.200.

Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Elastomeric thermoplastic moulding compositions. 4,338,409, Cl. 525-66.000.

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Ripert, Roger L., 4,337,919, Cl. 251-304.000.

Grumman Aerospace Corporation: *See*—
Miller, John M.; and Barton, Richard O., 4,338,031, Cl. 356-356.000.

Gsell, Laurenz: *See*—
Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.

GTE Products Corporation: *See*—
Vanderpool, Clarence D.; and McClintic, Robert P., 4,338,126, Cl. 75-84.000.

Guerre, Robert P., to Exxon Research & Engineering Co. Coal cleaning process. 4,338,188, Cl. 209-2.000.

Guinle, David P., to Owens-Illinois, Inc. Closure assembly. 4,337,869, Cl. 215-201.000.

Gulf Oil Corporation: *See*—
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,338,414, Cl. 525-193.000.
Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,338,415, Cl. 525-193.000.
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Barie, Walter P., Jr.; Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,338,171, Cl. 204-159.150.
Patel, Natu R., 4,338,257, Cl. 260-454.000.

Gulliksen, John E.; and Hamilton, William H., to Koehler Manufacturing Company. Luminaire apparatus including expansible reflector means and method of reflecting radiant energy to provide a spot to flood configuration. 4,338,655, Cl. 362-281.000.

Gunderson, Richard H., to Exxon Production Research Company. Universal joint for multiple conduit system. 4,337,970, Cl. 285-136.000.

Gunesin, Binnur: *See*—
Dougherty, David J.; Gunesin, Binnur; and Spiewak, John W., 4,338,425, Cl. 526-216.000.

Gunter, Thomas G.: *See*—
Tredennick, Harry L.; and Gunter, Thomas G., 4,338,661, Cl. 364-200.000.

Gusev, Stanislav I.: *See*—
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.

Guzik, Ira: *See*—
Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, 4,338,495, Cl. 179-99.00M.

H. J. Heinz Company: *See*—
Buchele, Byron D., 4,338,155, Cl. 156-539.000.

Haataja, Bruce A.; Kilpela, Tauno B.; Lund, Anders E.; and Hamilton, James F., to Michigan Technological University. Pallets molded from matted wood flakes. 4,337,710, Cl. 108-53.300.

Habig, Kurt; Baessler, Konrad; Schulz, Lothar; and Schutte, Heinz, to Hoechst Aktiengesellschaft. Method for removing nitrosation agent(s) from a nitrated aromatic compound. 4,338,473, Cl. 568-933.000.

Hackforth GmbH & Co.: *See*—
Walter, Jurgen, 4,337,629, Cl. 464-24.000.

Haddad, James H.: *See*—
Pennington, Nicholas D.; and Haddad, James H., 4,338,475, Cl. 585-408.000.

Haferl, Peter E., to RCA Corporation. Vertical deflection circuit. 4,338,549, Cl. 315-393.000.

Hager, Bror O. Apparatus for treatment of wood. 4,337,720, Cl. 118-50.000.

Haggar Company: *See*—
Off, Joseph W. A.; and Early, Judson H., 4,337,881, Cl. 223-1.000.

Haider, Francis J.; and Kent, Allen R., to Audiotronics Video Display Division, Inc. Cathode ray tube monitor. 4,338,635, Cl. 358-254.000.

Hale Fire Pump Company: *See*—
Eberhardt, H. Alfred, 4,337,830, Cl. 169-24.000.

Hall, Ronald A., to Exploration Logging, Inc. Method and apparatus for measuring the movement of a spiral wound wire rope. 4,338,565, Cl. 324-206.000.

Hall, Walter J.: *See*—
Chabala, Leonard V.; and Hall, Walter J., 4,338,499, Cl. 200-50.00C.

Haller, Henry E., III: *See*—
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.

Halliburton Company: *See*—
Kendrick, William D., 4,337,971, Cl. 285-315.000.

Hallidy, William M. Reversible direct current machine with movable stator. 4,338,536, Cl. 310-191.000.

Halpern, Yuval, to Borg-Warner Chemicals, Inc. Intumescent flame retardant thermoplastic polyester compositions. 4,338,245, Cl. 524-100.000.

Halpern, Yuval, to Borg-Warner Chemicals, Inc. Intumescent flame retardant thermoplastic polymethacrylate compositions. 4,338,246, Cl. 524-100.000.

Hamada, Osamu, to Sony Corporation. Digital waveform generating apparatus. 4,338,674, Cl. 364-718.000.

Hamer, David E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,338,250, Cl. 260-397.200.

Hamilton, James F.: *See*—
Haataja, Bruce A.; Kilpela, Tauno B.; Lund, Anders E.; and Hamilton, James F., 4,337,710, Cl. 108-53.300.

Hamilton, William H.: *See*—
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Hammond, Kenneth G.; and Chafetz, Harry, to Texaco Inc. Quaternary ammonium succinimide salt composition and lubricating oil containing same. 4,338,206, Cl. 252-34.000.

Hamon, Christian H., to Societe Anonyme de Telecommunications. Cryostatic device. 4,337,624, Cl. 62-45.000.

Hampson, Michael R.: *See*—
Dickson, Ronald; and Hampson, Michael R., 4,338,179, Cl. 204-284.000.

Hampton, Auborn R. Golf club cart carrier. 4,337,882, Cl. 224-42.03R.

Hanacek, William A.; Kahl, James E.; and Mackenzie, Angus B., to Castle & Cooke, Inc. Mushroom casing composition and process. 4,337,594, Cl. 47-1.100.

Hanamura, Michihiro, to Kuraray Co., Ltd. Photoelectrodes for photoelectrochemical cells. 4,338,180, Cl. 204-290.00R.

Hancou, Theodore, to Societe d'Exploitation de Brevets J.B. Screen wiper. 4,337,547, Cl. 15-250.420.

Handel, Richard R., to RCA Corporation. CRT With arc suppression means therein. 4,338,543, Cl. 313-457.000.

Handelskontor Ludbert Graf zu Munster GmbH & Co.: *See*—
Graf zu Munster, Ludbert, 4,338,134, Cl. 106-85.000.

Haneda, Hideo: *See*—
Yamanaka, Minoru; Haneda, Hideo; Kato, Masatoshi; and Suzuki, Mitsuyuki, 4,337,794, Cl. 137-596.170.

Hanna, William T.: *See*—
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Hansen, Elmer K. Helical storage bin. 4,337,600, Cl. 52-82.000.

Hansen, John D.: *See*—
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Hansen, Lynn D.: *See*—
Spevak, Richard P.; and Hansen, Lynn D., 4,337,779, Cl. 128-691.000.

Hanson, Steven P.: *See*—
Breslow, Jeffrey D.; Rosenwinkel, Donald A.; Hanson, Steven P.; and Harper, Rex M., 4,337,948, Cl. 273-237.000.

Harja, Arne M., to Sundstrand Corporation. Magnetic tape cassette. 4,337,909, Cl. 242-199.000.

Harman, Neil W.: *See*—
Harris, Richard G.; Dalessio, Robert J.; and Harman, Neil W., 4,338,513, Cl. 235-449.000.

Harmelin, Guy: *See*—
Grandcolas, Jean; Harmelin, Guy; Lazzarini, Roger; and Reverchon, Bernard, 4,338,080, Cl. 432-115.000.

Harnischfeger Corporation: *See*—
Gattu, Narahari, 4,337,868, Cl. 212-267.000.
Vaerk, Lembit; and Gattu, Narahari, 4,337,601, Cl. 52-118.000.

Harper, Jon J.; and Zeitlin, Martin A., to Standard Oil Company (Indiana). Removal of bromobutanone from acetic acid. 4,338,464, Cl. 562-608.000.
Harper, Rex M.: *See*—
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Harrington, Edward R.: *See*—
Marzocchi, Alfred; Bolen, Charles E.; Harrington, Edward R.; and Roberts, Michael G., 4,338,231, Cl. 523-214.000.
Harris, Jack. Marine growth wiper. 4,337,716, Cl. 114-222.000.
Harris, Kenneth R. Apparatus and method for drying a substance. 4,337,583, Cl. 34-33.000.
Harris, Richard G.; Dalessio, Robert J.; and Harman, Neil W., to Honeywell Information Systems Inc. Bistable magnetic wire badge reader. 4,338,513, Cl. 235-449.000.
Harris, Robert F.; Hoffman, Dwight K.; and Hickner, Richard A., to Dow Chemical Company, The. Radiation-curable resins. 4,338,232, Cl. 523-414.000.
Harte, Kenneth J.: *See*—
Bono, David C.; Fishbein, Marvin; and Harte, Kenneth J., 4,338,548, Cl. 315-382.000.
Hartemann, Pierre, to Thomson-CSF. Process for compensating temperature variations in surface wave devices and pressure transducer utilizing this process. 4,338,575, Cl. 331-65.000.
Hartlaub, Jerome T.; McDonald, Ray S.; and Hudziak, Lawrence C., to Medtronic, Inc. Rate limited pacer. 4,337,777, Cl. 128-419.0PG.
Hartwimmer, Robert: *See*—
Sulzbach, Reinhard A.; and Hartwimmer, Robert, 4,338,237, Cl. 524-777.000.
Haruta, Masahiro: *See*—
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.
Hase, Christian: *See*—
Fischer, Herbert; Scheuermann, Fanny; Hase, Christian; and Krause, Horst-Jurgen, 4,338,214, Cl. 252-545.000.
Hasegawa, Ryusuke: *See*—
Briggs, James E., Jr.; and Hasegawa, Ryusuke, 4,338,131, Cl. 148-403.000.
Hasegawa, Shinichi: *See*—
Nakai, Eiichiro; Kojima, Hiroshi; Tanaka, Shoichi; Kai, Toshiyuki; and Hasegawa, Shinichi, 4,338,286, Cl. 423-12.000.
Hasegawa, Tokuichiro, to Kawai, Takashi, a part interest. Method of controlling cockroaches. 4,337,592, Cl. 43-113.000.
Hasegawa, Tsuguo: *See*—
Nabeta, Takeshi; Masui, Takeshi; and Hasegawa, Tsuguo, 4,338,378, Cl. 428-462.000.
Hashimoto, Kaname; and Ikeda, Saizo, to Daicel Chemical Industries, Ltd. Surface coating composition. 4,338,375, Cl. 428-412.000.
Hashimoto, Mitsuru: *See*—
Sakai, Kiyoshi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,338,388, Cl. 430-59.000.
Hashimoto, Shintaro; Komaki, Shigeki; and Tanimoto, Akira, to Sharp Kabushiki Kaisha. Metallic housing for an electronic apparatus with a flat keyboard. 4,338,502, Cl. 200-159.00B.
Hashirano, Masaru: *See*—
Yabu, Toshiomi; Wada, Tatsuo; Hashirano, Masaru; and Yamada, Kouichi, 4,338,640, Cl. 360-73.000.
Hastings, Donald R.: *See*—
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.
Hastings, Thomas N.: *See*—
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Hatada, Kenji; and Kobayashi, Hiroaki, to Toray Industries, Inc. Polyvinyl chloride sheet and method of making the same. 4,337,768, Cl. 128-214.00D.
Hattori, Tadashi: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,337,643, Cl. 74-35.000.
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, to Nippondenso Co., Ltd. Torque transmission belt means. 4,338,081, Cl. 474-201.000.
Hatz, Ernst; and Eibl, Heinz, to Motorenfabrik Hatz GmbH & Co. KG. Drive unit for a compressor of a heat pump. 4,338,524, Cl. 290-2.000.
Haub, John T.; Krassas, James G.; Rustad, Stanley C.; and Davis, Noel, to General Mills, Inc. Method and apparatus for increasing the spacing between plants in accordance with their growth rate. 4,337,986, Cl. 308-177.000.
Haubner, Georg: *See*—
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Haufe, Jurgen: *See*—
Kessler, Peter; Kaiser, Joachim; Keil, Wolfgang; Despang, Hans-Guenter; Haufe, Jurgen; and Kieser, Matthias, 4,337,903, Cl. 242-56.00A.
Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Benzothiadiazines having diuretic activity. 4,338,435, Cl. 544-13.000.
Hauser Verwaltungs-Gesellschaft mit beschrankter Haftung: *See*—
Desor, Gerhard, 4,338,065, Cl. 417-207.000.
Hawkins, James H. Whaler retainer. 4,338,040, Cl. 403-385.000.
Hawkins, John J., to Beckman Instruments, Inc. Diaryl phosphate morpholinium salts. 4,338,440, Cl. 544-110.000.
Hayakawa Rubber Co., Ltd.: *See*—
Fujii, Toshihiro; and Yokota, Sekiji, 4,338,224, Cl. 523-177.000.
Hayakawa, Yoshihiro: *See*—
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,337,652, Cl. 73-146.500.
Hazan, Isidor, to Du Pont de Nemours, E. I., and Company. Electrocoating composition with polyhydroxyamine and acrylic or methacrylic polymers. 4,338,235, Cl. 524-504.000.
Hazan, Isidor, to Du Pont de Nemours, E. I., and Company. Polyhydroxyamine dispersant useful in electrodeposition. 4,338,236, Cl. 524-320.000.
Heasley, Ralph A., to Riker Laboratories, Inc. Hydrophilic choline salicylate formulation. 4,338,311, Cl. 424-233.000.
Heater, Charles P. Machine for making longitudinal and transverse folds in fabric. 4,338,086, Cl. 493-419.000.
Hebrank, William H. Heat recovery and air preheating apparatus for textile dryer ovens. 4,337,585, Cl. 34-86.000.
Hecht, James L.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Polyethylene terephthalate blends. 4,338,243, Cl. 524-287.000.
Heckman, Richard A.: *See*—
Mickelsen, Roger W.; Infanger, Rex C.; and Heckman, Richard A., 4,337,727, Cl. 119-2.000.
Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, to Janssen Pharmaceutica, N.V. Substituted 1-(2-aryl-1,3-dioxolan-2-ylmethyl)-1H-1,2,4-triazoles. 4,338,327, Cl. 424-269.000.
Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
Beisel, Hermann, 4,337,699, Cl. 101-348.000.
Heim Universal Corporation: *See*—
Rangel, Edward, 4,337,559, Cl. 29-149.50B.
Heine, Bertha E.: *See*—
Heine, Charles A., 4,337,957, Cl. 280-7.140.
Heine, Charles A., to Heine, Bertha E. Wagon to sled conversion kit. 4,337,957, Cl. 280-7.140.
Heinemann Electric Company: *See*—
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Hellemans, Julianus J.: *See*—
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Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Fischer, Herbert; Scheuermann, Fanny; Hase, Christian; and Krause, Horst-Jurgen, 4,338,214, Cl. 252-545.000.
Wegener, Ingo; Glasl, Johann; and Werdehausen, Achim, 4,338,212, Cl. 252-174.220.
Henrich, Robert S., to Bendix Corporation, The. Dual coil driver. 4,338,651, Cl. 361-154.000.
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., to Zoecon Corporation; and ICI Ltd. Novel compositions and methods. 4,338,318, Cl. 424-251.000.
Herbst, Heiner; and Pfleiderer, Hans-Jorg, to Siemens Aktiengesellschaft. Analog-digital converter for the evaluation of the output signal of an optoelectronic sensor element. 4,338,515, Cl. 250-214.00R.
Hermann Rappold & Co. GmbH: *See*—
Lonardo, Pietro, 4,337,789, Cl. 137-340.000.
Herron, David K.; and Lunn, William H. W., to Eli Lilly and Company. 7-[2-[(Substituted benzoyl)amino]acetamido]cephalosporins. 4,338,436, Cl. 544-16.000.
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Heslinga, Adolf; and Greidanus, Pieter J., to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek. Method of preparing a polymer mixture, formed products obtained therefrom and polymer alloy. 4,338,417, Cl. 525-197.000.
Hetzel, Max. Electronically controlled thread-cutting machine. 4,338,556, Cl. 318-569.000.
Heusler, Samuel, to Sulzer Brothers Limited. Safety system for a double acting servomotor. 4,337,689, Cl. 91-438.000.
Hewitt, Harvey J., to Xerox Corporation. Overcoated photoreceptor containing inorganic electron trapping and hole trapping layers. 4,338,387, Cl. 430-58.000.
Hewlett-Packard Company: *See*—
Engel, Steven J.; Marsh, Richard E.; and Rhodes, Robert P., 4,338,589, Cl. 340-347.0CC.
Morrill, Justin S., Jr.; and Hansen, John D., 4,338,677, Cl. 364-900.000.
Hibner, David H., to United Technologies Corporation. Viscous damper. 4,337,983, Cl. 308-26.000.
Hice, Robert C., Sr. Tree support for hunters. 4,337,844, Cl. 182-187.000.
Hickman, Howard M.: *See*—
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Hickner, Richard A.: *See—*
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Highlander, Sarah K.: *See—*
Manis, Jack J.; and Highlander, Sarah K., 4,338,400, Cl. 435-172.000.

Highley, Derek R.; and Sane, Jayant N., to Gillette Company, The. Hair setting and bodying composition and method. 4,338,295, Cl. 424-71.000.

Higuchi, Chojiro: *See—*
Mita, Ryuichi; Yamaguchi, Akihiro; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,338,259, Cl. 260-465.50R.

Higuchi, Toshiharu: *See—*
Takanashi, Yukio; Nakayama, Shouji; and Higuchi, Toshiharu, 4,338,542, Cl. 313-446.000.

Hilbert, Francis H.: *See—*
Parker, Norman W.; and Hilbert, Francis H., 4,338,491, Cl. 179-1.0GS.

Hildebrand, Dietrich; and Lohnert, Wolfgang, to Bayer Aktiengesellschaft. Process for dyeing with reactive dyestuffs. 4,338,093, Cl. 8-549.000.

Hill, Alan H., to General Engineering Radcliffe 1979 Limited. Method and apparatus for the incorporation of additives into plastics materials. 4,338,274, Cl. 264-171.000.

Hill, Harold L.: *See—*
Czekajewski, Jan A.; Hill, Harold L.; and Kober, Kenneth J., 4,337,726, Cl. 119-1.000.

Hill-Rom Company, Inc.: *See—*
Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., 4,338,485, Cl. 174-48.000.

Himmelmann, Wolfgang; Bergthaller, Peter; and Sobel, Johannes, to Agfa-Gevaert Aktiengesellschaft. Process for hardening photographic gelatin. 4,338,394, Cl. 430-621.000.

Himpsl, Francis L.: *See—*
Shore, Sheldon G.; Toft, Mark A.; and Himpsl, Francis L., 4,338,289, Cl. 423-294.000.

Hino, Ken-ichi: *See—*
Kyo, Sunao; Omura, Katsumi; and Hino, Ken-ichi, 4,338,478, Cl. 585-606.000.

Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, to Sandoz Ltd. Benzofuran(2)one or indolin(2)one compounds useful as stabilizers for organic materials. 4,338,244, Cl. 524-109.000.

Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Single facer. 4,337,884, Cl. 226-52.000.

Hirao, Koji: *See—*
Kazaoka, Kenichi; Hirao, Koji; and Takahasi, Hideki, 4,337,978, Cl. 297-367.000.

Hirasuna, Thomas J.: *See—*
Morimoto, Keisuke; Edgar, Brenton G.; and Hirasuna, Thomas J., 4,338,340, Cl. 426-104.000.

Hirata, Makizo; and Abe, Shinji, to Kawasaki Jukogyo Kabushiki Kaisha. Cooling liquid temperature control system for internal combustion engine. 4,337,733, Cl. 123-41.100.

Hiratsuka, Motoki: *See—*
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.

Hirshorn, Michael S.: *See—*
Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., 4,337,776, Cl. 128-419.0PT.

Hitachi Cable, Ltd.: *See—*
Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.

Hitachi Chemical Company Ltd.: *See—*
Maekawa, Iwao; and Makino, Daisuke, 4,338,427, Cl. 528-53.000.
Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.

Hitachi, Ltd.: *See—*
Fukushima, Isao; Nishijima, Hideo; Satoh, Kenji; and Teshima, Tunehiko, 4,338,554, Cl. 318-328.000.
Mohri, Katsuo; and Okada, Yoshinori, 4,338,645, Cl. 360-137.000.
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,338,372, Cl. 428-336.000.
Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, 4,338,558, Cl. 318-802.000.
Sato, Hideo; Kawakami, Kanji; and Nishihara, Motohisa, 4,337,665, Cl. 73-766.000.
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.
Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.
Terashima, Isamu; Uchida, Shigeru; and Senba, Eiiji, 4,338,019, Cl. 355-14.00D.
Yamakido, Kazuo, 4,338,656, Cl. 363-63.000.

Hobart Corporation: *See—*
Mathieu, Raymond J., 4,338,583, Cl. 335-186.000.

Hoechst Aktiengesellschaft: *See—*
Habig, Kurt; Baessler, Konrad; Schulz, Lothar; and Schutte, Heinz, 4,338,473, Cl. 568-933.000.
Sulzbach, Reinhard A.; and Hartwimmer, Robert, 4,338,237, Cl. 524-777.000.

Hoenig, James R.; and Mallorca, Salvador C., to Continental Group, Inc., The. Snap lock cover end unit. 4,337,874, Cl. 220-306.000.

Hoffken, Erich; and Beckers, Karl-Dieter, to Martin & Pagenstecher GmbH. Process and device for producing the refractory lining of metallurgical vessels. 4,337,897, Cl. 239-214.250.

Hoffman, David S.: *See—*
Rogers, Walter C., Jr.; and Hoffman, David S., 4,337,977, Cl. 297-85.000.

Hoffman, Dwight K.: *See—*
Harris, Robert F.; Hoffman, Dwight K.; and Hickner, Richard A., 4,338,232, Cl. 523-414.000.

Hoffmann-La Roche Inc.: *See—*
Chan, Ka-Kong; and Pawson, Beverly A., 4,338,253, Cl. 260-408.000.
Imhof, Rene; and Kyburz, Emilio, 4,338,444, Cl. 546-138.000.

Hogg, David C.: *See—*
Strauch, Richard G.; and Hogg, David C., 4,338,608, Cl. 343-779.000.

Hogsett, Robert F.; Huggins, Dale K.; and Beckstead, Leo W., to Amax Inc. Process for conditioning tungsten concentrates. 4,338,287, Cl. 423-53.000.

Hohman, Charles M.; and Propster, Mark A., to Owens-Corning Fiberglas Corporation. Method for controlling particulate emissions. 4,338,113, Cl. 65-27.000.

Hoiberg, Douglas I.: *See—*
Carlson, Lennart L.; and Hoiberg, Douglas I., 4,337,800, Cl. 138-122.000.

Holdeman, John W., to Borg-Warner Corporation. Transmission shift control apparatus. 4,337,675, Cl. 74-477.000.

Holick, Michael F., to Massachusetts General Hospital. Sunscreening agent. 4,338,293, Cl. 424-59.000.

Holley, Loraine K.: *See—*
Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., 4,337,776, Cl. 128-419.0PT.

Holm, Lars-Erik. Trolley check-out monitoring system. 4,338,594, Cl. 340-568.000.

Holmes, William A., to Polaroid Corporation. 35 mm Cassette with film rewind limit, exposure indicator, and film release. 4,338,015, Cl. 354-275.000.

Holt, Jack W.: *See—*
United States of America, National Aeronautics and Space Administration; Dotts, Robert L.; and Holt, Jack W., 4,338,368, Cl. 428-212.000.

Holubka, Joseph W., to Ford Motor Company. Alkaline resistant organic coatings for corrosion susceptible substrates I. 4,338,423, Cl. 525-511.000.

Honeywell Inc.: *See—*
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., 4,337,638, Cl. 73-1.00R.
Motchenbacher, Curtus D.; and Nicholas, Merle E., 4,337,658, Cl. 73-335.000.

Honeywell Information Systems Inc.: *See—*
Harris, Richard G.; Dalessio, Robert J.; and Harman, Neil W., 4,338,513, Cl. 235-449.000.
Steiner, Gordon L.; O'Keefe, David B.; and Miller, Robert C., 4,338,597, Cl. 340-706.000.

Hooker Chemicals & Plastics Corp.: *See—*
Reghi, Gary A., 4,338,140, Cl. 148-6.14R.

Hooper, John D.; and Britton, John F., to Imperial Group Limited. Forming sheet from reconstituted tobacco. 4,337,783, Cl. 131-375.000.

Hoover, C. Roger. Thread protector. 4,337,799, Cl. 138-96.00T.

Hoover, Robert A., to Prince Manufacturing Corporation. Poppet trip device for hydraulic cylinders. 4,337,687, Cl. 91-401.000.

Hoppe, Joachim A.: *See—*
Escaron, Pierre C.; and Hoppe, Joachim A., 4,337,969, Cl. 285-24.000.

Hopper, James A., to American Sterilizer Company. Double lip seal with pressure compensation. 4,337,956, Cl. 277-29.000.

Horikoshi, Shigeo: *See—*
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.

Horng, Cheng T.: *See—*
Cavaliere, Joseph R.; Horng, Cheng T.; Konian, Richard R.; Rupprecht, Hans S.; and Schwenker, Robert O., 4,338,138, Cl. 148-1.500.

Horste, Stephen C.; and Bergman, Ronald B., to Visual Systems Corporation. Adjustable blip sensor interface for microfilm reader and microfilm reader printers. 4,338,519, Cl. 250-239.000.

Horton, Donald D.: *See—*
Murphy, John H.; Brodzinski, John J.; and Horton, Donald D., 4,337,859, Cl. 206-37.000.

Hosaka, Toshihiko; and Akiyama, Toru. Tracking servo system of video disc player. 4,338,682, Cl. 369-44.000.

Hoshito, Kazuo: *See—*
Sato, Hideaki; Kitamura, Takashi; Masegi, Koichi; and Hoshito, Kazuo, 4,338,577, Cl. 372-36.000.

Hosler, Peter: *See—*
Lyons, James E.; and Hosler, Peter, 4,338,469, Cl. 568-666.000.

Hosono, Nagao; Kanbe, Junichiro; Arao, Kozo; and Miyake, Nobuyuki, to Canon Kabushiki Kaisha. Developing device. 4,337,724, Cl. 118-652.000.

Hotchkiss, Noel J., to Declitractor, Inc. Declination transposer. 4,337,577, Cl. 33-1.00N.

Houghton, Russell J., to International Business Machines Corp. Integrated delay circuits. 4,338,532, Cl. 307-590.000.

Howard, John V., to RCA Corporation. Television deflection yoke mount. 4,338,584, Cl. 335-210.000.

Hoydic, Stephen V., Jr.: *See—*
Martin, William C.; and Hoydic, Stephen V., Jr., 4,337,635, Cl. 72-410.000.

Hoyle, David C.; and Kandarian, Sue. Ankle exercise device. 4,337,939, Cl. 272-96.000.

Hubele, Adolf: *See—*
Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, 4,338,327, Cl. 424-269.000.

Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, to Agfa-Gevaert AG. Circuit for indicating the condition of the battery in a photographic camera. 4,338,596, Cl. 340-636.000.

Hudziak, Lawrence C.: *See—*
Hartlaub, Jerome T.; McDonald, Ray S.; and Hudziak, Lawrence C., 4,337,777, Cl. 128-419.0PG.

Huemmer, Thomas F.: *See—*
Barie, Walter P., Jr.; Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,338,171, Cl. 204-159.150.

Hueschens, Rolf: *See—*
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heil, Insa; and Wolf, Klaus-Ullrich, 4,338,314, Cl. 424-246.000.

Huff, Norman T.; Shetterly, Donivan M.; and Kalisher, Lawrence I., to Owens-Illinois, Inc. Apparatus and method for reducing mechanical dead times in the operation of a glassware forming machine. 4,338,116, Cl. 65-29.000.

Huffer, Wolfgang: *See—*
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,338,258, Cl. 260-456.00A.

Huffy Corporation: *See—*
Allen, David A.; and Witala, Jay D., 4,337,962, Cl. 280-279.000.

Huggins, Dale K.: *See—*
Hogsett, Robert F.; Huggins, Dale K.; and Beckstead, Leo W., 4,338,287, Cl. 423-53.000.

Huggins, Larry F.: *See—*
Mailander, Michael P.; Krutz, Gary W.; and Huggins, Larry F., 4,337,611, Cl. 56-10.200.

Hughes Aircraft Company: *See—*
Basiulis, Algerd, 4,337,998, Cl. 350-312.000.

Hughes, Donald W. K.; and Lauterbach, John H. F., to AMP Incorporated. Method of manufacturing electrical connector receptacles. 4,337,574, Cl. 29-883.000.

Hughes, Eric; and McKnight, Donald, to Rolls-Royce Limited. Gas turbine engine fuel burners. 4,337,618, Cl. 60-39.550.

Hunt, Harold W.: *See—*
Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., 4,338,602, Cl. 343-10.000.

Hunter, Walter D., to Texaco Development Corp. Process for secondary recovery. 4,338,203, Cl. 252-8.55D.

Hurco Manufacturing Company, Inc.: *See—*
Rolland, Burton A., 4,337,637, Cl. 72-461.000.

Husqvarna Aktiebolag: *See—*
Engman, Thomas O. J., 4,337,748, Cl. 123-602.000.

Hutcheson, William F., to Rossville Yarn Processing Company. Simulated Berber yarn and process of producing same. 4,338,090, Cl. 8-478.000.

Hutter, Charles G., III, to Physical Systems, Inc. Method of securing an adhesive attachment assembly to a substrate. 4,338,151, Cl. 156-344.000.

Hybrid Systems Corporation: *See—*
Wilensky, Samuel, 4,338,592, Cl. 340-347.0CC.

Hydrocarbon Research, Inc.: *See—*
Sirkar, Amalesh K., 4,338,472, Cl. 568-861.000.

Hydrowatt Systems Limited: *See—*
Frey, Bernhard, 4,337,955, Cl. 277-12.000.

Hylsa, S.A.: *See—*
San Jose-Alcalde, Juan L., 4,338,123, Cl. 75-34.000.

Hyltin, Tom M.; and Jamieson, J. Scott. Digital thermostat. 4,337,822, Cl. 165-26.000.

Ibamoto, Masahiko: *See—*
Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, 4,338,558, Cl. 318-802.000.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Well type refrigerated case with defrost air intake and colliding band air defrost. 4,337,626, Cl. 62-82.000.

Ichinose, Noboru: *See—*
Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.

ICI Americas Inc.: *See—*
Yellin, Tobias O.; and Mant, Derrick M., 4,338,447, Cl. 548-133.000.
Yellin, Tobias O.; and Mant, Derrick M., 4,338,448, Cl. 548-133.000.

ICI Australia Limited: *See—*
Moody, Keith; and Mole, Thomas, 4,338,477, Cl. 585-520.000.

ICI Ltd.: *See—*
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,338,318, Cl. 424-251.000.

Ideas That Sell, Inc.: *See—*
Massino, Chester F., 4,337,944, Cl. 273-65.00A.

Ignoffo, Vincent E., to Vinco Sales Corp., Inc. Exhaust gas purifier. 4,338,284, Cl. 422-171.000.

Iio, Toshimitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Two-cycle engine. 4,337,734, Cl. 123-65.0PE.

Iizuka, Haruhiko: *See—*
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.

Ikeda, Hideo; Teraoka, Masao; and Ishimaru, Junzo, to Nissan Motor Co., Ltd.; and Keeper Co., Ltd. Sealing device with seal lips forming V-shape. 4,337,953, Cl. 277-152.000.

Ikeda, Saizo: *See—*
Hashimoto, Kaname; and Ikeda, Saizo, 4,338,375, Cl. 428-412.000.

Ikeda, Tadashi: *See—*
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Ikeguchi, Nobuyuki; and Osaki, Yasunori, to Mitsubishi Gas Chemical Company, Inc. Coating method. 4,338,373, Cl. 428-383.000.

Ikimi, Kiyoshi: *See—*
Takano, Tetsuo; Suzukamo, Gohu; Ishino, Masaru; and Ikimi, Kiyoshi, 4,338,467, Cl. 568-428.000.

Imbessi, James: *See—*
Ozer, Theodore; Yankovoy, Alexander; and Imbessi, James, 4,338,050, Cl. 408-1.00R.

Imchemie Kunststoff GmbH: *See—*
Melchior, Bernd, 4,338,353, Cl. 427-36.000.

Imhof, Rene; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Phenylhexahydro-2H-quinolizines. 4,338,444, Cl. 546-138.000.

Imperial Chemical Industries Limited: *See—*
Bolton, David H., 4,338,197, Cl. 210-621.000.
Carr, Paul L. I., 4,338,275, Cl. 264-176.00F.
Carr, Paul L. I., 4,338,276, Cl. 264-176.00F.
Marsham, Peter R., 4,338,316, Cl. 424-250.000.
Turner, Mervyn E. D.; and Quayle, Joshua C., 4,338,097, Cl. 23-230.00C.
Yellin, Tobias O.; and Mant, Derrick M., 4,338,447, Cl. 548-133.000.
Yellin, Tobias O.; and Mant, Derrick M., 4,338,448, Cl. 548-133.000.

Imperial Group Limited: *See—*
Hooper, John D.; and Britton, John F., 4,337,783, Cl. 131-375.000.

Indesit Industria Elettrodomestici Italiana, S.p.A.: *See—*
Marino, Francesco, 4,338,550, Cl. 315-408.000.

Infanger, Rex C.: *See—*
Mickelsen, Roger W.; Infanger, Rex C.; and Heckman, Richard A., 4,337,727, Cl. 119-2.000.

Ingersoll-Rand Company: *See—*
Clendaniel, W. Richard, 4,337,695, Cl. 100-195.000.
Krasnoff, Eugene L.; and Luthi, Oscar, 4,338,192, Cl. 210-221.200.
Shaffer, Robert W., 4,337,984, Cl. 308-103.000.

Innertsberger, Ernst: *See—*
Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, 4,338,217, Cl. 252-358.000.

Inokuchi, Nobuyuki: *See—*
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Inomata, Jihei: *See—*
Unuma, Kunio; Saito, Hiroyasu; Inomata, Jihei; and Takizawa, Saburo, 4,338,461, Cl. 562-507.000.

Inoue, Hiroshi; Isoi, Masaaki; Yoda, Makoto; and Komatsu, Masato, to Toa Nenryo Kogyo Kabushiki Kaisha. Polyolefin composition containing (a) filler (b) nucleating agent and (c) heat deterioration inhibitor. 4,338,228, Cl. 524-120.000.

Inoue-Japax Research Incorporated: *See—*
Kato, Yutaka; and Fujimori, Ryo, 4,338,033, Cl. 356-444.000.

Inskeep, John M.: *See—*
Murib, Jawad H.; and Inskeep, John M., 4,338,290, Cl. 423-481.000.

Insta-Print, Incorporated: *See—*
Peck, Gene E.; and Cooperberg, Bruce, 4,338,016, Cl. 354-303.000.

Institute of Nuclear Energy Research: *See—*
Chang, Chau-Ting, 4,338,125, Cl. 75-84.000.

Instrumentation Laboratory Inc.: *See—*
Ambers, Paul J.; and Stevens, R. Barry, 4,338,280, Cl. 422-68.000.

Intel Corporation: *See—*
Palmer, John F.; Ravenel, Bruce W.; and Nave, Rafi, 4,338,675, Cl. 364-748.000.

International Business Machines Corporation: *See—*
Beck, Vernon D., 4,338,541, Cl. 313-411.000.
Cavaliere, Joseph R.; Horng, Cheng T.; Konian, Richard R.; Rupprecht, Hans S.; and Schwenker, Robert O., 4,338,138, Cl. 148-1.500.
Chevillat, Pierre; and Schindler, Hans R., 4,338,588, Cl. 340-146.30H.
Engler, Edward M.; Kuptsis, John D.; Schad, Robert G.; and Tomkiewicz, Yaffa, 4,338,392, Cl. 430-270.000.
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.
Houghton, Russell J., 4,338,532, Cl. 307-590.000.

International Harvester Co.: *See—*
Bettin, Leonard A.; and Swanson, William C., 4,337,959, Cl. 280-43.230.

International Remote Imaging Systems, Inc.: *See—*
Bolz, Gunner; and DeForest, Sherman E., 4,338,024, Cl. 356-23.000.

International Standard Electric Corporation: *See—*
Bush, Eric L.; and Workman, Ernest J., 4,338,354, Cl. 427-80.000.

International Telephone and Telegraph Corporation: *See—*
Austin, Robert R.; and Ginkel, Ernst R., 4,337,654, Cl. 73-190.0CV.
Stapleton, John J., 4,338,627, Cl. 358-113.000.

Interplay Design Limited: *See—*
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Intertherm Inc.: *See*—
DelPercio, Michael J., 4,337,823, Cl. 165-48.00R.
Inubushi, Akiyoshi: *See*—
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Inventio AG: *See*—
Kindler, Gerhard, 4,337,848, Cl. 187-29.00R.
Schroder, Joris; and Meier, Martin, 4,337,847, Cl. 187-29.00R.
Isalski, Wieslaw H.; and Ashton, Gregory J., to Petrocarbon Developments Ltd. Process for the recovery of argon. 4,338,108, Cl. 62-22.000.
Isbell, Arthur F., to Meiller Research, Inc. Synthesized scent. 4,338,465, Cl. 568-69.000.
Ishida, Fumihiko: *See*—
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,338,372, Cl. 428-336.000.
Ishigaki, Yoshio: *See*—
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Ishii, Takeshi: *See*—
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Ishikawa, Tadashi: *See*—
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Ishimaru, Junzo: *See*—
Ikeda, Hideo; Teraoka, Masao; and Ishimaru, Junzo, 4,337,953, Cl. 277-152.000.
Ishino, Masaru: *See*—
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Isoi, Masaaki: *See*—
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Italfarmaco S.p.A.: *See*—
Cremonesi, Pietro, 4,338,401, Cl. 435-178.000.
Itatani, Hiroshi; Shiotani, Akinori; and Yokota, Akiyoshi, to Ube Industries, Ltd. Method of producing biphenyltetracarboxylic esters. 4,338,456, Cl. 560-96.000.
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, to Onomichi Kumika K.K. Synthetic resin composition. 4,338,241, Cl. 523-200.000.
Ito, Susumu; and Ogino, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Inductive heating apparatus. 4,338,503, Cl. 219-10.770.
Itoh, Masatoshi: *See*—
Kuramoto, Yoshio; Ueda, Hiroshi; and Itoh, Masatoshi, 4,337,996, Cl. 350-255.000.
Itokawa, Natsuo: *See*—
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Iwane, Yasuhiko: *See*—
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Iwasaki, Motoaki: *See*—
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,337,652, Cl. 73-146.500.
Iwase, Shigeo, to Taiyo Seisakusho Manufacturing Co. Ltd. Automatic crab leg shell cutting-in machine. 4,337,552, Cl. 17-71.000.
J. I. Case Company: *See*—
Nissen, Roland N., 4,337,837, Cl. 172-822.000.
Seaberg, David H., 4,337,836, Cl. 172-826.000.
Jabsen, Felix S., to Babcock & Wilcox Company, The. Helical steam generator tube support. 4,337,827, Cl. 165-172.000.
Jackisch, Philip F., to Ethyl Corporation. Stabilization of dibromostyrene. 4,338,474, Cl. 570-105.000.
Jackson, Andrew C., to Children's Hospital Medical Center, The. Gas volume flow rate measurement apparatus. 4,337,639, Cl. 73-3.000.
Jackson, Harold. Reflective device for carrying variable information for example for advertising purposes. 4,337,590, Cl. 40-615.000.
Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Company. Preparation of polyesters and poly(ester-carbonates) by acidolysis of aromatic polycarbonates. 4,338,422, Cl. 525-461.000.
Jacobus, David P.: *See*—
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Jadlocki, Joseph F., Jr.; and Thompson, John S., to FMC Corporation. Smoked meat products which inhibit the growth of clostridium botulinum and the formation of enterotoxin. 4,338,345, Cl. 426-532.000.
James Mackie & Sons Limited: *See*—
McDonald, William J.; and Robinson, Brian, 4,337,557, Cl. 28-250.000.
James, William. Plate separator construction method. 4,337,561, Cl. 29-157.00R.
Jamieson, J. Scott: *See*—
Hyltin, Tom M.; and Jamieson, J. Scott, 4,337,822, Cl. 165-26.000.
Janson, James G., to United States of America, Navy. Electromechanical warhead safety-arming device. 4,337,701, Cl. 102-249.000.
Janssen Pharmaceutica, N.V.: *See*—
Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, 4,338,327, Cl. 424-269.000.
Jayaraman, Anantharaman: *See*—
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Michalko, Jan, 4,337.712, Cl. 111-7.000.
Jefferson, John R.; and Cunliffe, Frank, to Lucas Industries Limited. Fuel injection pumping apparatus. 4,337,747, Cl. 123-501.000.
Jenkins, William A., to Monarch Marking Systems, Inc. Endless printing band. 4,337,698, Cl. 101-111.000.
Jensen, Norman P.; Jacobus, David P.; and Jones, Howard, to Merck & Co., Inc. 1-[4-(4-Sulfanilyl)phenyl] urea and derivatives in compositions and methods of treating rheumatoid arthritis and immune complex diseases. 4,338,334, Cl. 424-322.000.
Jet Aeration Company: *See*—
Jordan, Edward J., 4,338,191, Cl. 210-199.000.
Jodon Engineering Associates, Inc.: *See*—
Gillespie, John W., 4,337,648, Cl. 73-117.300.
Johansson, Lars-Goran, to Stal-Laval Turbin AB. Fluidized bed combustion chambers. 4,338,074, Cl. 431-6.000.
John Zink Company: *See*—
Tuttle, Willard N., 4,338,101, Cl. 55-48.000.
Johnson, Carl K.: *See*—
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,337,571, Cl. 29-623.200.
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Pieniak, Heinz A.; and Repke, Virginia L., 4,337,771, Cl. 128-287.000.
Johnson, Kenneth C. Hologram movie projection apparatus. 4,337,992, Cl. 350-3.790.
Johnson, Lawrence D. Heat pump grain dryer. 4,337,584, Cl. 34-65.000.
Johnson, Lawrence P., to General Motors Corporation. Fuel cap with poppet type valves. 4,337,873, Cl. 220-204.000.
Johnson, Lester L., Sr. Oil reconditioning device. 4,338,189, Cl. 210-180.000.
Johnson, Mark R., to Dow Chemical Company, The. Inhibitor for the polymerization of a 2-isocyanatoalkyl ester of an $\alpha\beta$-ethylenically unsaturated carboxylic acid. 4,338,162, Cl. 203-8.000.
Johnson, Oliver W., to Eaton Corporation. Load sensing hydraulic system. 4,337,620, Cl. 60-418.000.
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Johnson, Wilfred V. Energy storage. 4,337,622, Cl. 60-641.130.
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Jolly, Jacques: *See*—
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Jones, Geraint A. C.; and Ahmed, Haroon. Inscribing apparatus and methods. 4,338,508, Cl. 219-121.0EJ.
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Jordan, Edgar R. Valve control mechanism for internal combustion engines. 4,337,739, Cl. 123-198.00F.
Jordan, Edward J., to Jet Aeration Company. Apparatus for treating fluids. 4,338,191, Cl. 210-199.000.
Jorgensen, Neal A.: *See*—
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Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, to Rohm GmbH. Process for graft copolymerization. 4,338,418, Cl. 525-281.000.
Jundt, Werner: *See*—
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Jutte, Gottfried W.; and McHugh, John V., to Richardson Chemical Company. Container for a maintenance-free battery. 4,338,383, Cl. 429-88.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
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Kahl, James E.: *See*—
Hanacek, William A.; Kahl, James E.; and Mackenzie, Angus B., 4,337,594, Cl. 47-1.100.
Kai, Toshiyuki: *See*—
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Kajimoto, Norifumi: *See*—
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Kaku, Yasuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for producing spherical graphite castings. 4,337,816, Cl. 164-58.100.

Kali-Chemie Pharma GmbH: *See—*
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Hell, Insa; and Wolf, Klaus-Ullrich, 4,338,314, Cl. 424-246.000.

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Kamimae, Hiroshi; and Ishikawa, Tadashi, to Nihon Nosan Kogyo Kabushiki Kaisha. Composite for treating diabetes. 4,338,304, Cl. 424-150.000.

Kamimori, Tadatoshi; and Mizuhashi, Mamoru, to Asahi Glass Company, Ltd. Electrochromic light controlling panel. 4,338,000, Cl. 350-357.000.

Kamyr, Inc.: *See—*
Richter, Johan C. F. C.; and Sherman, Michael I., 4,338,049, Cl. 406-63.000.

Kanatani, Yoshiharu: *See—*
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Kanbe, Junichiro: *See—*
Hosono, Nagao; Kanbe, Junichiro; Arao, Kozo; and Miyake, Nobuyuki, 4,337,724, Cl. 118-652.000.

Kanda, Kunihiko, to Sigma Corporation. Method for forming electrical connecting lines by monitoring the etch rate during wet etching. 4,338,157, Cl. 156-627.000.

Kandarian, Sue: *See—*
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Kaneko, Masao: *See—*
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Karigane, Yukihiro: *See—*
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Katner, Allen S.; and Bogard, Stephen J., to Eli Lilly and Company. 1-and 2-(1-Alkyl-1H-tetrazol-5-yl-methyl)-1H-tetrazol-5-thiols and 1-cyanomethyl tetrazole-5-thiol. 4,338,452, Cl. 548-251.000.

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Kato, Yutaka; and Fujimori, Ryo, to Inoue-Japax Research Incorporated. Densitometer. 4,338,033, Cl. 356-444.000.

Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, to Fujitsu Fanuc Limited. Method and apparatus for restoring a wire electrode. 4,338,505, Cl. 219-69.00M.

Katsuzawa, Yukio: *See—*
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Kaufmann, Karl E.: *See—*
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Kautex-Maschinenbau GmbH: *See—*
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Kawabe, Yunosuke, to Fujitsu Limited. Semiconductor devices having improved alignment marks. 4,338,620, Cl. 357-50.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,337,681, Cl. 84-1.240.

Kawai, Takashi: *See—*
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Kawakami, Kanji: *See—*
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Kawakami, Tomiko: *See—*
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Kawakami, Yoshio; Matsuzawa, Yoneo; and Kajimoto, Norifumi, to TDK Electronics Co., Ltd. Magnetic recording tape. 4,338,367, Cl. 428-141.000.

Kawamoto, Tamio, to Nissan Motor Co., Ltd. Control apparatus for a vehicle power transmission. 4,337,673, Cl. 74-475.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
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Kawasaki Motors Corp. U.S.A.: *See—*
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Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramics. 4,338,403, Cl. 501-136.000.

Kazaoka, Kenichi; Hirao, Koji; and Takahasi, Hideki, to Aisin Seiki Kabushiki Kaisha. Mechanism for adjusting inclination angle of seat. 4,337,978, Cl. 297-367.000.

Kear, Bernard H.: *See—*
King, William H.; and Kear, Bernard H., 4,337,886, Cl. 228-263.00B.

Keeler, Frederick D. Tamper-proof closure cap and method of fabrication. 4,337,870, Cl. 215-252.000.

Keeper Co., Ltd.: *See—*
Ikeda, Hideo; Teraoka, Masao; and Ishimaru, Junzo, 4,337,953, Cl. 277-152.000.

Keil, Wolfgang: *See—*
Kessler, Peter; Kaiser, Joachim; Keil, Wolfgang; Despang, Hans-Guenter; Haufe, Jurgen; and Kieser, Matthias, 4,337,903, Cl. 242-56.00A.

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Kelley, James M.; and Coury, Fred F., to Relational Memory Systems, Inc. Relational break signal generating device. 4,338,660, Cl. 364-200.000.

Kelsey-Hayes Company: *See—*
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Keltronics Corporation: *See—*
Yakel, Alfred W., 4,338,496, Cl. 179-175.10R.

Kendrick, William D., to Halliburton Company. Remote connector. 4,337,971, Cl. 285-315.000.

Kennecott Corporation: *See—*
Shaffer, Peter T. B.; Roy, Rustum; and Macmillan, Norman H., 4,338,215, Cl. 252-628.000.

Kennedy, Harry L.; Kesaree, Prakash M.; and Rahimzadeh, Abofazl, to Velasco Scale Company, Inc. Method and apparatus for liquid filling of containers. 4,337,802, Cl. 141-1.000.

Kenneth E. Beswick Limited: *See—*
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Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., to Nordson Corporation. Continuous coater. 4,338,364, Cl. 427-424.000.

Kenrich Petrochemicals, Inc.: *See—*
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Kent, Allen R.: *See—*
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Kern, Calvin V.; and Villano, James J., to Eltra Corporation. Sliding door actuating mechanism. 4,337,596, Cl. 49-210.000.

Kernforschungsanlage Julich GmbH: *See—*
Chatzipetros, Johann; and Helten, Manfred, 4,337,669, Cl. 73-863.110.
Divisek, Jiri; Mergel, Jurgen; and Bodewig, Frans G., 4,338,167, Cl. 204-60.000.

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Kessler, Peter; Kaiser, Joachim; Keil, Wolfgang; Despang, Hans-Guenter; Haufe, Jurgen; and Kieser, Matthias, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Method of and a device for controlling the exchange of rolls of a web-like material. 4,337,903, Cl. 242-56.00A.

Kestner, Mark O., to Apollo Technologies, Inc. Method of facilitating low temperature discharge from a container of particulate material. 4,338,359, Cl. 427-230.000.

Kidde, Inc.: *See—*
Spain, Stanley R., 4,337,867, Cl. 212-181.000.

Kiencke, Uwe: *See—*
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Kilgore, Lee A., to Westinghouse Electric Corp. Marine propulsion system. 4,338,525, Cl. 290-17.000.

Killark Electric Manufacturing Co.: *See—*
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Kilpela, Tauno B.: *See—*
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Kimberly-Clark Corporation: *See—*
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Kimura, Shoji: *See—*
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Kinbara, Hiroji: *See*—
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Kindler, Gerhard, to Inventio AG. Start control device, especially for an elevator. 4,337,848, Cl. 187-29.00R.
King, Richard P. Enclosure. 4,337,602, Cl. 52-202.000.
King, William H.; and Kear, Bernard H., to United Technologies Corporation. Welding with a wire having rapidly quenched structure. 4,337,886, Cl. 228-263.00B.
Kinoshita, Mitsuo: *See*—
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.
Kipp, Frederick M.; and Wetterhorn, Richard H., to Dresser Industries, Inc. Pressure gauge construction. 4,337,664, Cl. 73-741.000.
Kirk, Kenneth L., to Amtrol. Double wall heat exchanger. 4,337,824, Cl. 165-70.000.
Kishi, Norimasa: *See*—
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Kitamura, Takashi: *See*—
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Kitao, Kazuhiko; and Nishimura, Ken-ichi, to Kyoto Yakuhin Kogyo Kabushiki Kaisha. Adjuvant for promoting absorption of pharmacologically active substances through the rectum. 4,338,306, Cl. 424-178.000.
Kitazawa Valve Co., Ltd.: *See*—
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Kjellin, Per G.; and Persson, Carl G. A., to Aktiebolaget Draco. Method for the treatment of chronic obstructive airway or cardiac diseases. 4,338,319, Cl. 424-253.000.
Klockner-Humboldt-Deutz AG: *See*—
Megerle, Friedrich, 4,337,927, Cl. 266-190.000.
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Lichtner, Emil; Ungeringer, Gerd; and Giebel, Gerhard, 4,337,735, Cl. 123-193.00H.
Knaus, Edward E.; Corleto, Linda A.; and Redda, Kinfe, to Canadian Patents & Development Limited. N-(Carbonylamino)-tetrahydropyridyl derivatives. 4,338,445, Cl. 546-270.000.
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Koehler Manufacturing Company: *See*—
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Kohlpaintner, Georg; and Rottenfusser, Wolfgang, to Webasto-Werk W. Baier GmbH & Co. Vehicle roof. 4,337,974, Cl. 296-214.000.
Kohzai, Yoshinori; Oyama, Shigeaki; and Katsuzawa, Yukio, to Fujitsu Fanuc Limited. Direct current motor having E-shaped interpoles. 4,338,535, Cl. 310-186.000.
Koide, Tsuyoshi; and Suzuki, Yasuo, to Toyoda Koki Kabushiki Kaisha. Method of shoulder grinding. 4,337,599, Cl. 51-289.00R.
Koike, Shigemitsu: *See*—
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Koinuma, Tokuju; Saito, Hisao; and Miura, Heihachi, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetron unit with a magnetic field adjusting means. 4,338,545, Cl. 315-39.710.
Koizumi, Yutaka, to Ricoh Company, Ltd. Multiple reproduction process and apparatus involves toned electrophotographic image transfer. 4,338,386, Cl. 430-49.000.
Kojima, Hiroshi: *See*—
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Kolmar Laboratories Inc.: *See*—
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Komaki, Shigeki: *See*—
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Komatsu, Fumito; and Kamijima, Tadashi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Printing apparatus. 4,337,696, Cl. 101-93.040.
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Komiya, Akitoshi; Yagi, Toshiharu; and Kondo, Akiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp. 4,338,544, Cl. 313-489.000.
Kompfner, Rudolf, to National Research Development Corporation. Holographic optical fiber coupler. 4,337,993, Cl. 350-96.190.
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Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, to Canon Kabushiki Kaisha. Printer. 4,338,035, Cl. 400-144.200.
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Preiss, Michael; Konig, Hans-Bodo; Metzger, Karl G.; and Feyen, Peter, 4,338,434, Cl. 542-420.000.
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Clark, Allen; and Konshak, Michael V., 4,338,642, Cl. 360-97.000.
Koomey, Inc.: *See*—
Chauffe, John A., 4,337,653, Cl. 73-151.000.
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Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexandr A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.
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Carlson, Clifford R.; Kotzan, Joseph M.; and Voelkle, Leo H., 4,337,742, Cl. 123-339.000.
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Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.
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Kraus, Menahem A.; and Frommer, Moshe A., to A. T. Ramot Plastics Ltd. Peritoneal artificial kidney. 4,338,190, Cl. 210-195.200.
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Fischer, Herbert; Scheuermann, Fanny; Hase, Christian; and Krause, Horst-Jurgen, 4,338,214, Cl. 252-545.000.
Krauss, Albert: *See*—
Wessel, Ulrich; and Krauss, Albert, 4,337,613, Cl. 56-370.000.
Kreibaum, Otto. Method of producing cut timber from round timber. 4,337,810, Cl. 144-357.000.
Krekeler, Claude B., to Cincinnati Mine Machinery Company, The. Wedge arrangements and related means for mounting means, base members, and bits, and combinations thereof, for mining, road working, or earth moving machinery. 4,337,980, Cl. 299-91.000.
Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Equipment for ultrasonic examination. 4,337,661, Cl. 73-628.000.
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Kretz, Carl, 4,337,661, Cl. 73-628.000.
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Farooq, Saleem; Ackermann, Peter; Drabek, Jozef; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,338,468, Cl. 568-637.000.
Kritzer, Richard W., to Peerless of America, Inc. Heat exchangers and method of making same. 4,337,826, Cl. 165-151.000.
Kritzler, Steven, to Otis Elevator Company. High fluorocarbon content coating composition, method of application, and coated article. 4,338,376, Cl. 428-417.000.
Kronogard, Sven-Olof. Vehicle drive system. 4,337,623, Cl. 60-716.000.

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Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, 4,338,509, Cl. 219-121.0PR.
Krumkains, Eriks V., to Eli Lilly and Company. Plant growth regulation. 4,338,118, Cl. 71-76.000.
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Krylov, Gleb L.; Stanovoi, Ivan V.; and Fuga, Georgy P. Plate shears. 4,337,679, Cl. 83-385.000.
Kuck, Mark A.; and Miller, Gary K., to Stauffer Chemical Company. Electrochemical synthesis of organophosphorus compounds. 4,338,166, Cl. 204-59.00R.
Kudalkar, Kishor N., to Weyerhaeuser Company. Non-glued manufacturers joint. 4,337,888, Cl. 229-48.00R.
Kuehnle, Manfred R.; and Compton, James C., to Coulter Systems Corporation. Light scanning assembly for electrophotographic printing plate making apparatus. 4,338,018, Cl. 355-8.000.
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, to Toyo Rubber Chemical Industrial Corp. Method for manufacturing a low density synthetic resin body. 4,338,271, Cl. 264-54.000.
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Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, 4,337,651, Cl. 73-129.000.
Kunz, Peter, to Mettler Instrumente AG. Weighing apparatus including improved permanent magnet system. 4,337,838, Cl. 177-212.000.
Kuptsis, John D.: *See*—
Engler, Edward M.; Kuptsis, John D.; Schad, Robert G.; and Tomkiewicz, Yaffa, 4,338,392, Cl. 430-270.000.
Kurakake, Mitsuo, to Fujitsu Fanuc Ltd. Position control system for a closed loop type numerical-controlled machine tool. 4,338,659, Cl. 364-170.000.
Kuramoto, Yoshio; Ueda, Hiroshi; and Itoh, Masatoshi, to Minolta Camera Kabushiki Kaisha. Lens mount support for self-extending camera. 4,337,996, Cl. 350-255.000.
Kuraray Co., Ltd.: *See*—
Hanamura, Michihiro, 4,338,180, Cl. 204-290.00R.
Kyo, Sunao; Omura, Katsumi; and Hino, Ken-ichi, 4,338,478, Cl. 585-606.000.
Kurath, Paul, to Abbott Laboratories. 2'-N-Des-β-lysyl antibiotic AX-127B-1 and 4-N-acyl and alkyl derivatives thereof. 4,338,307, Cl. 424-180.000.
Kurath, Paul; and Fager, Earl E. C., to Abbott Laboratories. 4-N-β-Lysyl-2'-N-des-β-lysyl antibiotic AX-127B-1 and the pharmaceutically acceptable salts thereof. 4,338,308, Cl. 424-180.000.
Kurath, Paul, to Abbott Laboratories. 4',5'-Dihydro-antibiotic AX-127B-1; 2'-N-des-β-lysyl-4',5'-dihydro-antibiotic AX-127B-1; and 4-N-derivatives thereof. 4,338,309, Cl. 424-180.000.
Kurnit, Norman A., to United States of America, Energy. Raman scattering in a whispering mode optical waveguide. 4,338,570, Cl. 330-4.600.
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Diermayer, Werner; and Kutzner, Luitpold, 4,337,892, Cl. 236-93.00R.
Kuwahara, Toru: *See*—
Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.
Kuwana, Noriaki: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.
Kyburz, Emilio: *See*—
Imhof, Rene; and Kyburz, Emilio, 4,338,444, Cl. 546-138.000.
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Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.
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Kitao, Kazuhiko; and Nishimura, Ken-ichi, 4,338,306, Cl. 424-178.000.
La-Van Tech Development Corp.: *See*—
Tech, James H.; LaFountain, Mary J.; and Van Sickle, Virginia M., 4,337,791, Cl. 137-556.000.
Labovitz, Jeffrey N.: *See*—
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,338,318, Cl. 424-251.000.
Lacroix, Hubert: *See*—
Debayeux, Christian; Lacroix, Hubert; and Sternicha, Felix, 4,337,722, Cl. 118-303.000.
LaCroix, Stephen R., to Garrett Corporation, The. Gas turbine fuel control system. 4,337,615, Cl. 60-39.14R.
Lafarge Conseils et Etudes: *See*—
Grandcolas, Jean; Harmelin, Guy; Lazzarini, Roger; and Reverchon, Bernard, 4,338,080, Cl. 432-115.000.
LaFountain, Mary J.: *See*—
Tech, James H.; LaFountain, Mary J.; and Van Sickle, Virginia M., 4,337,791, Cl. 137-556.000.
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Glabe, Elmer F.; Anderson, Perry W.; and Lafsidis, Stergios, 4,338,336, Cl. 426-1.000.
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Acharya, Vikramkumar; and Lakshmanan, Pallavoor R., 4,338,414, Cl. 525-193.000.
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Barie, Walter P., Jr.; Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,338,171, Cl. 204-159.150.
Lambelin, Georges E.: *See*—
Gillet, Claude L.; Roba, Joseph L.; Snyers, Michel; Van Dorsser, William R.; and Lambelin, Georges E., 4,338,330, Cl. 424-273.00B.
Lampkin, Curtis M., to Photon Power, Inc. Heated conveyor system. 4,338,078, Cl. 432-11.000.
Landis, John M.: *See*—
Asick, John C.; Landis, John M.; and Ritchie, Leon T., 4,337,989, Cl. 339-143.00R.
Landry, Norman R., to RCA Corporation. Short horn radiator assembly. 4,338,609, Cl. 343-786.000.
Lane, Ernest, Jr.; and Seekins, Raymond E., to General Motors Corporation. Power element assembly. 4,337,621, Cl. 60-527.000.
Lane, George A.; and Rossow, Harold E., to Dow Chemical Company, The. Hydrated $MgCl_2$ reversible phase change compositions. 4,338,208, Cl. 252-70.000.
Lang, Clifford E., Jr.: *See*—
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., 4,338,350, Cl. 426-658.000.
Lapine, Anatole; and Schreiber, Reinhold, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Rear of an automobile, preferably a passenger car. 4,337,976, Cl. 296-216.000.
Laroche, Pierre: *See*—
Sadoune, Joseph; and Laroche, Pierre, 4,337,997, Cl. 350-310.000.
Lary, Richard F.: *See*—
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,338,663, Cl. 364-200.000.
Laschenov, Jury V.: *See*—
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.
Lauterbach, John H. F.: *See*—
Hughes, Donald W. K.; and Lauterbach, John H. F., 4,337,574, Cl. 29-883.000.
Lautrette, Jean-Claude; and Queyroix, Christian A., to F. Aoustin et Cie. Horizontal endless belt vacuum filter. 4,338,193, Cl. 210-401.000.
Law, Gerald S. Accident prevention apparatus for power takeoffs. 4,337,841, Cl. 180-271.000.
Lawrence, Frederick J., to Gradco/Dendoki, Inc. Compact sorter. 4,337,936, Cl. 271-293.000.
Lawrence, Roger W. Lateral tube transmission control. 4,337,674, Cl. 74-475.000.
Lawson, Christopher J.; and Symes, Kenneth C., to Talres Development (N.A.) N.V. Indican and suspensions and gels thereof and their uses. 4,338,432, Cl. 536-123.000.
Lazzarini, Roger: *See*—
Grandcolas, Jean; Harmelin, Guy; Lazzarini, Roger; and Reverchon, Bernard, 4,338,080, Cl. 432-115.000.
Le Materiel Biomedical: *See*—
Benajam, Alain C., 4,337,991, Cl. 350-87.000.
Le Materiel Telephonique Thomson-CSF: *See*—
Petitjean, Christian H., 4,338,604, Cl. 343-17.20R.
Leach, Jerald G., to Texas Instruments Incorporated. Liquid crystal display system having temperature compensation. 4,338,600, Cl. 340-812.000.
Leach, Ronald W. A.: *See*—
Baxter, Robert; and Leach, Ronald W. A., 4,338,121, Cl. 71-118.000.
Lear, Edward C.: *See*—
Bardsley, Harold B.; Lear, Edward C.; and Jones, J. Robert, 4,338,032, Cl. 356-431.000.
Lee, Gene D.: *See*—
Nelson, William E.; and Lee, Gene D., 4,338,615, Cl. 346-160.000.
Lee, George T.: *See*—
Faulkner, Bobby P.; Lee, George T.; Schumacher, Peter L.; and Weinecke, Michael H., 4,338,079, Cl. 432-14.000.
Lee, James K., to Eastman Kodak Company. Bistable actuating mechanism for optical apparatus. 4,338,009, Cl. 354-152.000.
Lee, Richard H.: *See*—
Johnson, William C.; Rasmussen, David H.; and Lee, Richard H., 4,337,805, Cl. 141-71.000.
Leigh, Arthur G.: *See*—
Clements, Anthony H.; and Leigh, Arthur G., 4,338,210, Cl. 252-96.000.
Leininger, Steven, to Tandy Corporation. Apparatus for alpha-numeric/graphic display. 4,338,599, Cl. 340-721.000.
Leiter, L. David, to West Company, The. Gimbal anvil for seal force test device. 4,337,644, Cl. 73-52.000.
Lemelson, Jerome H. Scanning apparatus and method. 4,338,626, Cl. 358-93.000.
Lemercier, Pierre: *See*—
Biancale, Pierre; Corfa, Yves-Paul; Lemercier, Pierre; Moreau, Jean-Pierre; and Vertut, Jean, 4,338,043, Cl. 405-172.000.
Le Mert, Alfred J., to Ludwig Industries. Outrigger holder assembly for percussion musical instruments. 4,337,684, Cl. 84-421.000.
Lemley, Leo W., to United States of America, Navy. Albedd radiation power converter. 4,338,560, Cl. 322-2.00A.
Lennox, Thomas M., to Luminaud Company. Electronic artificial larynx. 4,338,488, Cl. 179-1.0AL.

Leon, Luis P.; Yeh, Chien-Kuo; and Ahmad, Syed I., to Technicon Instruments Corporation. Method for the analysis of triglycerides. 4,338,395, Cl. 435-17.000.
Leonard, Kenneth L.; Colby, Dwight D.; Dougherty, William R.; Fahley, Jerome A.; and van Dyke, Martin J., to Honeywell Inc. Liquid gaging system self test circuitry. 4,337,638, Cl. 73-1.00R.
Leounes, Nicholas P. Heat re-taining collar. 4,337,752, Cl. 126-215.000.
Lerman, Max, to United States Manufacturing Company. Adjustable motion brace. 4,337,764, Cl. 128-80.00F.
Lersmacher, Bernhard; van Kollenburg, Ludovicus W. J.; Bastings, Leonardus C., deceased; and de Haan, Friedrich J., administrator, to U.S. Philips Corporation. Method of producing cuvettes for the flameless atomic absorption spectroscopy. 4,338,358, Cl. 427-227.000.
Lesher, George Y.; and Dickinson, William B., to Sterling Drug Inc. Di-(lower-alkyl)hydroxy-[2-oxo-2-(pyridinyl)ethyl]-propanedioates. 4,338,446, Cl. 546-314.000.
Lever Brothers Company: *See*—
Clements, Anthony H.; and Leigh, Arthur G., 4,338,210, Cl. 252-96.000.
Levine, Irving: *See*—
Cook, Yale B.; and Brooks, Charles R., 4,337,775, Cl. 128-349.00B.
Levy, David. Roulette gaming apparatus. 4,337,945, Cl. 273-142.00E.
Liberty Glass Company: *See*—
Brockway, M. Clifford; and Walters, Craig T., 4,338,114, Cl. 65-28.000.
Lichtner, Emil; Ungeringer, Gerd; and Giebel, Gerhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Light metal cylinder head for a valve-controlled internal combustion engine. 4,337,735, Cl. 123-193.00H.
Lienert, Gerold, to Rockwell International Corporation. Leaf spring stress peening method and apparatus. 4,337,632, Cl. 72-53.000.
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Hell, Insa; and Wolf, Klaus-Ullrich, to Kali-Chemie Pharma GmbH. [1,2]Anellated-7-phenyl-1,4-benzodiazepine and pharmaceutical compositions thereof and use for treatment of ulcers. 4,338,314, Cl. 424-246.000.
Lillibridge, Harold R.: *See*—
Sullivan, John; and Lillibridge, Harold R., 4,338,085, Cl. 493-254.000.
Limburg, William W.; Pai, Damodar M.; and Pearson, James M., to Xerox Corporation. Semiconductive organic compositions. 4,338,222, Cl. 252-500.000.
Lin, Kingso C., to Owens-Corning Fiberglas Corporation. Method and apparatus for applying textile sizes. 4,338,361, Cl. 427-299.000.
Lincoln, Frank H.: *See*—
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,338,325, Cl. 424-285.000.
Lindauer Dornier Gesellschaft mbH.: *See*—
Strahm, Christian, 4,337,630, Cl. 68-13.00R.
Strudel, Werner, 4,337,634, Cl. 72-113.000.
Lindeman, Patricia A. Portable bathing tub accessory for shower stall. 4,337,540, Cl. 4-546.000.
Linden, Hans W.: *See*—
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,338,261, Cl. 260-508.000.
Lindner, Christian: *See*—
Grigo, Ulrich; Fahnler, Friedrich; Lindner, Christian; and Binsack, Rudolf, 4,338,409, Cl. 525-66.000.
Sanderson, John R.; Binsack, Rudolf; Fahnler, Friedrich; and Lindner, Christian, 4,338,406, Cl. 525-66.000.
Lindstrom, Rune, to Skega AB. Device for attaching a cloth. 4,337,815, Cl. 160-392.000.
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I. High-voltage transformer-rectifier device. 4,338,657, Cl. 363-68.000.
Littrell, Gary L. Cable carrying floor duct apparatus. 4,338,484, Cl. 174-48.000.
Littwin, Burkhard, to Siemens Aktiengesellschaft. Gas display device with a profiled cathode. 4,338,539, Cl. 313-217.000.
Livne, Avinoam: *See*—
Trop, Moshe; and Livne, Avinoam, 4,338,347, Cl. 426-565.000.
Lobeck, Walter G., Jr.: *See*—
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., 4,338,317, Cl. 424-250.000.
Lobmann, Michele; and Florent, Gerard, to SmithKline-RIT. Influenza virus and process of producing a vaccine therefrom. 4,338,296, Cl. 424-89.000.
Lockett, James H., to Northrop Corporation. Variable geometry router. 4,338,052, Cl. 409-206.000.
Loffelholz, Frido: *See*—
Worschech, Kurt; Wedl, Peter; Loffelholz, Frido; Wegemund, Bernd; and Erwied, Werner, 4,338,226, Cl. 524-302.000.
Logothetis, Richard. Variable spot stage light. 4,338,654, Cl. 362-268.000.
Logue, Harold W., to General Electric Company. Cylinder handling device. 4,337,633, Cl. 72-94.000.
Lohberg, Werner, to Reuter Technologie GmbH. Feed system for introducing water vapor into the suction path of an internal combustion engine. 4,337,731, Cl. 123-25.00B.
Lohnert, Wolfgang: *See*—
Hildebrand, Dietrich; and Lohnert, Wolfgang, 4,338,093, Cl. 8-549.000.
Lohrey, Cecil R.: *See*—
Fullenkamp, Eugene H.; Burst, Francis J.; Lohrey, Cecil R.; and Drew, William D., 4,338,485, Cl. 174-48.000.
Lonardo, Pietro, to Hermann Rappold & Co. GmbH. Shut-off valve for interrupting a flow of a fluid through a pipeline. 4,337,789, Cl. 137-340.000.
Loos, Hendricus G. Dispersive instrument for measurement of particle size distributions. 4,338,030, Cl. 356-336.000.
Loosli, Hugo, to Schweizerische Lokomotiv und Maschinenfabrik. Railway locomotive. 4,337,706, Cl. 105-184.000.
Lopez, Rafael E. Arm muscle exerciser device. 4,337,937, Cl. 272-67.000.
Lorenz, Kurt: *See*—
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,338,161, Cl. 202-228.000.
Louboutin, Robert, to Degremont. Water treatment process and apparatus and device for the distribution of water to be treated into and for the recovery from washing liquid from a water treatment filter apparatus. 4,338,202, Cl. 210-795.000.
Lu, Chin H., to Xerox Corporation. Quarternary ammonium sulfate or sulfonate charge control agents for electrophotographic developers compatible with viton fuser. 4,338,390, Cl. 430-106.000.
Lucas Industries Limited: *See*—
Jefferson, John R.; and Cunliffe, Frank, 4,337,747, Cl. 123-501.000.
Smith, Trevor S., 4,337,617, Cl. 60-39.28R.
Ludwa, Raymond J.: *See*—
Evans, Stephen F.; Ludwa, Raymond J.; and Adalsteinsson, Orn, 4,338,366, Cl. 428-76.000.
Ludwig Industries: *See*—
Le Mert, Alfred J., 4,337,684, Cl. 84-421.000.
Ludwig, Walter F. Truck safety recorder. 4,338,512, Cl. 235-92.00T.
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., to Westinghouse Electric Corp. Method of making a conductor bar for dynamoelectric machines. 4,337,567, Cl. 29-596.000.
Luker, Graham J. Grease gun. 4,338,066, Cl. 417-259.000.
Luminaud Company: *See*—
Lennox, Thomas M., 4,338,488, Cl. 179-1.0AL.
Lund, Anders E.: *See*—
Haataja, Bruce A.; Kilpela, Tauno B.; Lund, Anders E.; and Hamilton, James F., 4,337,710, Cl. 108-53.300.
Lunn, William H. W.: *See*—
Herron, David K.; and Lunn, William H. W., 4,338,436, Cl. 544-16.000.
Herron, David K.; and Lunn, William H. W., 4,338,439, Cl. 544-24.000.
Luthi, Oscar: *See*—
Krasnoff, Eugene L.; and Luthi, Oscar, 4,338,192, Cl. 210-221.200.
Lyons, Dale E., to Atwood Vacuum Machine Company. Overflow and vent cap for a container. 4,337,875, Cl. 220-368.000.
Lyons, James E.; and Hosler, Peter, to Suntech, Inc. 8-Methoxy-p-menthane. 4,338,469, Cl. 568-666.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Rasch, Walter; Caspers, Karl-Heinz; Wiebicke, Klaus; and Albert, Max, 4,337,736, Cl. 123-193.00H.
Maa, Peter S.; Veluswamy, Lavanga R.; and Vadovic, Charles J., to Exxon Research & Engineering Co. Coal conversion in the presence of added alkali metal compounds. 4,338,184, Cl. 208-10.000.
Maa, Peter S.: *See*—
Vernon, Lonnie W.; and Maa, Peter S., 4,338,182, Cl. 208-8.0LE.
Macartney, Lawrence J.: *See*—
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.
Mackenzie, Angus B.: *See*—
Hanacek, William A.; Kahl, James E.; and Mackenzie, Angus B., 4,337,594, Cl. 47-1.100.
Macmillan, Norman H.: *See*—
Shaffer, Peter T. B.; Roy, Rustum; and Macmillan, Norman H., 4,338,215, Cl. 252-628.000.
Macourt, Denis J. C. Mineral exploration. 4,338,029, Cl. 356-311.000.
Maeda, Minoru: *See*—
Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.
Maekawa, Iwao; and Makino, Daisuke, to Hitachi Chemical Company Ltd. Process for producing polyimide-amide-carboxylic acid. 4,338,427, Cl. 528-53.000.
Maggi, Ernesto. Extinguishing chamber for an electric arc of the magnetic blow-out type. 4,338,501, Cl. 200-147.00A.
Magna Corporation: *See*—
Blair, Charles M., Jr., 4,337,828, Cl. 166-274.000.
Magnaflux Corporation: *See*—
Graham, Bruce C., 4,338,566, Cl. 324-216.000.
Magorian, William R., to United States of America, Navy. Self adaptive correlation radar. 4,338,603, Cl. 343-17.10R.
Maierson, Theodore, to Standard Register Company, The. Sensitized record sheet. 4,337,968, Cl. 282-27.500.
Mailander, Michael P.; Krutz, Gary W.; and Huggins, Larry F., to Purdue Research Foundation. Automatic control of a combine threshing cylinder and feeder conveyor. 4,337,611, Cl. 56-10.200.
Major, Jeffrey T., to Eltra Corporation. Removable brush holder for dynamoelectric machine. 4,338,538, Cl. 310-242.000.
Makino, Daisuke: *See*—
Maekawa, Iwao; and Makino, Daisuke, 4,338,427, Cl. 528-53.000.
Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.

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Male, Alan T.: *See*—
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Malm, Robert, to Northrop Corporation. Frame integrator for CID imaging system. 4,338,633, Cl. 358-213.000.
Manabe, Isao; and Inubushi, Akiyoshi, to Otsuka Chemical Co., Ltd. Metal corrosion inhibitor. 4,338,209, Cl. 252-75.000.
Manabe, Sugio: *See*—
Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, 4,338,279, Cl. 422-64.000.
Mandelkorn, Joseph. Very thin silicon wafer base solar cell. 4,338,481, Cl. 136-255.000.
Manis, Jack J.; and Highlander, Sarah K., to Upjohn Company, The. Co-integrate plasmids and their construction from plasmids of Escherichia and Streptomyces. 4,338,400, Cl. 435-172.000.
Mannesmann DeMag A.G.: *See*—
Becker, Klaus; Cittrich, Jurgen; and Kaufmann, Karl E., 4,337,704, Cl. 104-70.000.
Mant, Derrick M.: *See*—
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Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.
Marino, Francesco, to Indesit Industria Elettrodomestici Italiana, S.p.A. Circuit for obtaining saw-tooth current in a coil. 4,338,550, Cl. 315-408.000.
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Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.
Markem Corporation: *See*—
Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., 4,338,614, Cl. 346-155.000.
Markert, Gerhard: *See*—
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,338,418, Cl. 525-281.000.
Markham, Melvin C. Insulation anti-static and blowing machine. 4,337,902, Cl. 241-56.000.
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Marley-Wylain Company, The: *See*—
Ehret, Gordon F.; Rowley, William N.; and Mullen, Richard E., 4,338,546, Cl. 315-119.000.
Marrero, Louis. Versatile fluorescent lighting fixture. 4,338,653, Cl. 362-223.000.
Marsh, Richard E.: *See*—
Engel, Steven J.; Marsh, Richard E.; and Rhodes, Robert P., 4,338,589, Cl. 340-347.0CC.
Marshall, Robert T.: *See*—
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,337,549, Cl. 17-1.00R.
Marsham, Peter R., to Imperial Chemical Industries Limited. 9-Aryloxy prostane derivatives. 4,338,316, Cl. 424-250.000.
Marston Excelsior Limited: *See*—
Dickson, Ronald; and Hampson, Michael R., 4,338,179, Cl. 204-284.000.
Martin, Jean; and Jolly, Jacques, to Framatome. Finger mechanism, with a cyclic movement, for controlling a nuclear reactor. 4,338,159, Cl. 376-228.000.
Martin, Lawrence A.: *See*—
Barth, Jerry J.; and Martin, Lawrence A., 4,337,598, Cl. 51-135.0BT.
Martin & Pagenstecher GmbH: *See*—
Hoffken, Erich; and Beckers, Karl-Dieter, 4,337,897, Cl. 239-214.250.
Martin, Richard G.; and Brackney, Maurice R., to Multi-Elmac. Garage door operator with gas sensor. 4,338,526, Cl. 307-116.000.
Martin, William C.; and Hoydic, Stephen V., Jr., to Teledyne Penn-Union. Compression tool. 4,337,635, Cl. 72-410.000.
Martin, William J.: *See*—
Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., 4,338,506, Cl. 219-121.0LJ.
Maruscak, Ralph M. Household system for vacuum packing foods. 4,337,804, Cl. 141-65.000.
Maruyama, Takashi; and Ueno, Katsuji, to Sumitomo Chemical Company, Limited. Resin composition. 4,338,421, Cl. 525-397.000.
Maruyama, Takashi: *See*—
Ueno, Katsuji; and Maruyama, Takashi, 4,338,410, Cl. 525-132.000.
Marvin Glass & Associates: *See*—
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Ferris, Michael J., 4,337,949, Cl. 273-324.000.
Marzocchi, Alfred; Bolen, Charles E.; Harrington, Edward R.; and Roberts, Michael G., to Owens-Corning Fiberglas Corporation. Modified asphalt compositions. 4,338,231, Cl. 523-214.000.
Masaki, Kenji, to Nissan Motor Co., Ltd. System for feedback control of air/fuel ratio in internal combustion engine. 4,337,746, Cl. 123-489.000.
Masegi, Koichi: *See*—
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Massachusetts General Hospital: *See*—
Holick, Michael F., 4,338,293, Cl. 424-59.000.
Massachusetts Institute of Technology: *See*—
Fan, John C. C.; and Bachner, Frank J., 4,337,990, Cl. 350-1.700.
Suh, Nam P.; and Rinderle, James R., 4,338,068, Cl. 425-144.000.
Massey-Ferguson Inc.: *See*—
Dean, Earl E.; Quade, Marshall L.; and Temple, William F., 4,337,612, Cl. 56-98.000.
Massino, Chester F., to Ideas That Sell, Inc. Lighter and softer recreational balls. 4,337,944, Cl. 273-65.00A.
Mast, Rolf, to Armour-Dial, Inc. Antiperspirant compositions and methods for their preparation. 4,338,294, Cl. 424-68.000.
Masui, Takeshi: *See*—
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Masuzawa, Sigeaki; Miyazaki, Hiroshi; and Shibata, Shinya, to Sharp Kabushiki Kaisha. Speech synthesis method and device. 4,338,490, Cl. 179-1.0SM.
Mathias Streiff AG: *See*—
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Mathieu, Raymond J., to Hobart Corporation. Manual/magnetic motor contactor. 4,338,583, Cl. 335-186.000.
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Tire pressure drop detecting apparatus. 4,337,652, Cl. 73-146.500.
Matsufuji, Yohji: *See*—
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Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, 4,338,012, Cl. 354-200.000.
Matsumoto, Tokio: *See*—
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Matsumoto, Youichi: *See*—
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Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, to Nippon Shinyaku Co. Ltd. Moranoline derivatives and process for preparation thereof. 4,338,433, Cl. 536-46.000.
Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, to Canon Kabushiki Kaisha. Focusing screen. 4,338,012, Cl. 354-200.000.
Matsunaga, Tsutomu: *See*—
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Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,338,403, Cl. 501-136.000.
Morisawa, Masanori, 4,337,568, Cl. 29-598.000.
Yabu, Toshiomi; Wada, Tatsuo; Hashirano, Masaru; and Yamada, Kouichi, 4,338,640, Cl. 360-73.000.
Matsuura, Masataka: *See*—
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Mattson, Richard W., to Eltra Corporation. Throttle pedal feedback apparatus for economical engine operation. 4,337,743, Cl. 123-396.000.
Mauri Brothers & Thomson (Aust.) Pty. Limited: *See*—
Tucker, Raymond L., 4,337,871, Cl. 215-328.000.
Mayer, Claude, to Schlumberger Technology Corporation. Method of evaluating formations traversed by a borehole. 4,338,664, Cl. 364-422.000.
Mayer, Hans-Dietrich: *See*—
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Mayerhoefer, Horst: *See*—
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Mayerle, Leanne, to Celanese Corporation. Biological treatment of a formaldehyde-containing waste water contacted with a biomass together with a nitrogen compound. 4,338,196, Cl. 210-610.000.
Mayes, Warden W., to Cosden Technology, Inc. Method and apparatus for controlling the flow of molten reaction media. 4,338,096, Cl. 23-230.00A.
McAleer, William J.; and Markus, Henry Z., to Merck & Co., Inc. Vaccine stabilizer containing L-glutamic acid and L-arginine. 4,338,335, Cl. 424-361.000.
McAllister, Wesley J. Anatomically manipulable rotatable implement. 4,337,593, Cl. 46-64.000.
McCaslin, Robert E. Apparatus and method for generating light designs. 4,338,547, Cl. 315-312.000.
McClintic, Robert P.: *See*—
Vanderpool, Clarence D.; and McClintic, Robert P., 4,338,126, Cl. 75-84.000.
McDonald, Ray S.: *See*—
Hartlaub, Jerome T.; McDonald, Ray S.; and Hudziak, Lawrence C., 4,337,777, Cl. 128-419.0PG.
McDonald, William J.; and Robinson, Brian, to James Mackie & Sons Limited. Method and apparatus for texturizing thermoplastic yarn. 4,337,557, Cl. 28-250.000.
McDonnell Douglas Corporation: *See*—
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McGibbon, Gary M., to Xerox Corporation. Job recovery hierarchy in a reproduction machine. 4,338,023, Cl. 355-14.0SH.
McGinn, Terrance E., to Penn-Field Stove, Inc. Stove having nonescaping smoke. 4,337,753, Cl. 126-287.000.
McGraw-Edison Company: *See*—
Brown, Robert S.; Schwickert, Russell C.; and Demas, Nickolas, 4,337,645, Cl. 73-52.000.
Phillips, Paul E., 4,337,546, Cl. 15-49.00R.
McHugh, John V.: *See*—
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McKenna, Nicholas M. Q.; and Raven, Peter J. Rotary internal combustion engine. 4,337,741, Cl. 123-228.000.
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McLean, Charles M., to Docutel Corporation. Currency note dispensing system. 4,337,864, Cl. 209-534.000.
McNab, Incorporated: *See*—
Binder, Ira; and Teass, Horace A., Jr., 4,338,175, Cl. 204-195.00R.
McNeilab, Inc.: *See*—
Gardocki, Joseph F., 4,338,324, Cl. 424-266.000.
Tamura, Paul S., 4,338,174, Cl. 204-195.00P.
McRitchie, Allan C.: *See*—
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Mead Johnson & Company: *See*—
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Medtronic, Inc.: *See*—
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Spevak, Richard P.; and Hansen, Lynn D., 4,337,779, Cl. 128-691.000.
Megerle, Friedrich, to Klockner-Humboldt-Deutz AG. Furnace installation particularly for the melting of ore concentrate. 4,337,927, Cl. 266-190.000.
Meier, Martin: *See*—
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Meinel, Walter B.: *See*—
Meinel, Aden B.; and Meinel, Walter B., 4,337,758, Cl. 126-438.000.
Meinke, Peter. Drive and support arrangement for a disc-shaped rotor. 4,337,981, Cl. 308-10.000.
Melchior, Bernd, to Imchemie Kunststoff GmbH. Method for increasing the strength of a porous body. 4,338,353, Cl. 427-36.000.
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Mentzel, Werner: *See*—
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Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., to Rib Loc Hong Kong Limited. Machine and method for forming tubes from a strip. 4,337,564, Cl. 29-453.000.
Merck & Co., Inc.: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,338,437, Cl. 544-021.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,338,438, Cl. 544-21.000.
Jensen, Norman P.; Jacobus, David P.; and Jones, Howard, 4,338,334, Cl. 424-322.000.
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Merry, Jean-Louis, to Charbonnages de France. Apparatus for dusting off gas by filtration and aspiration cleaning of filter, and application to combustion gases. 4,338,104, Cl. 55-291.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
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Metallurgical, Inc.: *See*—
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Metatech Corporation: *See*—
Perlin, Alfred R., 4,337,774, Cl. 128-325.000.
Metrick, Glen F. Muscle testing apparatus. 4,337,780, Cl. 128-774.000.
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Kunz, Peter, 4,337,838, Cl. 177-212.000.
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Michael, Jacob G.; and Pesce, Amadeo J. Polypeptide active pollen immunosuppressant fraction. 4,338,297, Cl. 424-91.000.
Michalko, Jan, to Jednotne reolnicke druzstvo. Injection plow. 4,337,712, Cl. 111-7.000.
Michigan Technological University: *See*—
Haataja, Bruce A.; Kilpela, Tauno B.; Lund, Anders E.; and Hamilton, James F., 4,337,710, Cl. 108-53.300.
Mickelsen, Roger W.; Infanger, Rex C.; and Heckman, Richard A. Modular cage system for underwater use. 4,337,727, Cl. 119-2.000.
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Newman, Daniel D., 4,338,595, Cl. 340-600.000.
Mid-America Body & Equipment Co.: *See*—
Anderson, James E., 4,338,059, Cl. 414-501.000.
Mientek, Anthony P.: *See*—
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Miesel, John L., to Eli Lilly and Company. Formulations of dihalobenzoyl-substituted-pyridinylurea insecticides. 4,338,321, Cl. 424-263.000.
Milford, Alan H.; and Proulx, Oliver J., to Olin Corporation. Apparatus for crusing partially cured freely risen foam. 4,338,072, Cl. 425-371.000.
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Miller, John M.; and Barton, Richard O., to Grumman Aerospace Corporation. Laser grade, elevation, curve surveying system. 4,338,031, Cl. 356-356.000.
Miller, Peter S.; and Myers, Jack H., to Owens-Illinois, Inc. Web tension control method and apparatus. 4,337,904, Cl. 242-75.530.
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Mills, Thomas, to Sound Control, Inc. Rodent control apparatus and method. 4,338,593, Cl. 340-384.00E.
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Farago, Laszlo D., 4,338,022, Cl. 355-60.000.
Mosier, Douglas R., 4,338,649, Cl. 361-139.000.
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Mita, Ryuichi; Yamaguchi, Akihiro; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Inc. Alpha-halogeno-beta-aminopropionitriles or the mineral acid salts thereof, and processes for production thereof. 4,338,259, Cl. 260-465.50R.

Mitaka Instrument Company Limited: *See*—
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Mitsui Petrochemical Industries Ltd.: *See*—
Morita, Yoshinori; Kato, Akifumi; and Yamamoto, Ryoichi, 4,338,424, Cl. 526-65.000.
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Miyake, Nobuyuki: *See*—
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Miyazaki, Hiroshi: *See*—
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Mizumoto, Kastuji, to Pioneer Electronic Corporation. Two-phase brushless motor driving circuit. 4,338,551, Cl. 318-254.000.
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Canister for fuel evaporative emission control system. 4,338,106, Cl. 55-316.000.
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Mobil Oil Corporation: *See*—
Arbit, Harold A., 4,338,420, Cl. 525-388.000.
Pennington, Nicholas D.; and Haddad, James H., 4,338,475, Cl. 585-408.000.
Rollmann, Louis D., 4,338,288, Cl. 423-210.000.
Russo, Robert V., 4,338,365, Cl. 428-35.000.
Yan, Tsoung-yuan, 4,337,979, Cl. 299-4.000.
Mocquet, Gisele C.: *See*—
Dostert, Philippe L.; Douzon, Colette A.; Bourgery, Guy R.; Gouret, Claude G.; Mocquet, Gisele C.; and Coston, Jean A., 4,338,451, Cl. 548-232.000.
Modar, Inc.: *See*—
Modell, Michael, 4,338,199, Cl. 210-721.000.
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Mohri, Katsuo; and Okada, Yoshinori, to Hitachi, Ltd. Tape running time indication system. 4,338,645, Cl. 360-137.000.
Mole, Cecil J.: *See*—
Lugosi, Robert; Fechko, George J.; Male, Alan T.; Haller, Henry E., III; and Mole, Cecil J., 4,337,567, Cl. 29-596.000.
Mole, Thomas: *See*—
Moody, Keith; and Mole, Thomas, 4,338,477, Cl. 585-520.000.
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Molins, Desmond W., 4,338,057, Cl. 414-417.000.
Mominee, David E.: *See*—
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,337,564, Cl. 29-453.000.
Momiyama, Kikuo: *See*—
Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, 4,338,012, Cl. 354-200.000.
Monarch Marking Systems, Inc.: *See*—
Jenkins, William A., 4,337,698, Cl. 101-111.000.
Monette, Serge: *See*—
Stanley, Robert W.; Monette, Serge; and Kerfoot, Derek G. E., 4,338,168, Cl. 204-108.000.
Money, David K.: *See*—
Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., 4,337,776, Cl. 128-419.0PT.
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Coran, Aubert Y.; and Patel, Raman, 4,338,411, Cl. 525-145.000.
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Monte, Anthony J., to United States of America, Army. Method of recharging fire extinguisher bottles. 4,337,803, Cl. 141-2.000.
Monte, Salvatore J.: *See*—
Sugerman, Gerald; and Monte, Salvatore J., 4,338,220, Cl. 252-430.000.
Moody, Keith; and Mole, Thomas, to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Removal of catalyst residues from a gas. 4,338,477, Cl. 585-520.000.
Moog Inc.: *See*—
Caruso, John T., 4,337,797, Cl. 137-625.480.
Moon, Ronald L.: *See*—
Antypas, George A.; Bell, Ronald L.; and Moon, Ronald L., 4,338,480, Cl. 136-249.000.
Moore, James D. Tube end finishing device. 4,337,558, Cl. 29-33.00T.
Moore, L. Dow; and Das, Balbhadra, to PPG Industries, Inc. Sizing composition and sized glass fibers and strands produced therewith. 4,338,234, Cl. 523-206.000.
Moore, L. Dow: *See*—
Das, Balbhadra; and Moore, L. Dow, 4,338,233, Cl. 523-410.000.
Moore, Robert A.: *See*—
Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., 4,338,614, Cl. 346-155.000.
Moreau, Jean-Pierre: *See*—
Biancale, Pierre; Corfa, Yves-Paul; Lemercier, Pierre; Moreau, Jean-Pierre; and Vertut, Jean, 4,338,043, Cl. 405-172.000.
Morehouse, Charles C.: *See*—
Shaw, R. Howard; and Morehouse, Charles C., 4,338,521, Cl. 250-366.000.
Morgan, Nelson H., to University of California, The Regents of the. Room acoustics simulator. 4,338,581, Cl. 333-165.000.
Morganti, Emilio: *See*—
Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., 4,337,829, Cl. 166-366.000.
Morimoto, Keisuke; Edgar, Brenton G.; and Hirasuna, Thomas J., to General Foods Corporation. Extruded protein product. 4,338,340, Cl. 426-104.000.
Moringiello, Donald C.; and Dallmann, Stephen H., to United Technologies Corporation. Friction damper. 4,337,982, Cl. 308-26.000.
Morinibu, Yasuo: *See*—
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.
Morisaki, Itsuo, to Morisaki Jutakusangyo Kabushiki Kaisha. Super-surfacer. 4,337,808, Cl. 144-114.00A.
Morisaki Jutakusangyo Kabushiki Kaisha: *See*—
Morisaki, Itsuo, 4,337,808, Cl. 144-114.00A.
Morisawa, Masanori, to Matsushita Electric Industrial Co., Ltd. Process for fabricating cup-shaped coreless armature. 4,337,568, Cl. 29-598.000.
Morita, Yoshinori; Kato, Akifumi; and Yamamoto, Ryoichi, to Mitsui Petrochemical Industries Ltd. Multi-step gas-phase polymerization of olefins. 4,338,424, Cl. 526-65.000.
Morooka, Yasuo: *See*—
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.
Morrill, Justin S., Jr.; and Hansen, John D., to Hewlett-Packard Company. Multi-clock data capture circuit. 4,338,677, Cl. 364-900.000.
Morris, Benny G. Oil level gauge. 4,337,657, Cl. 73-313.000.
Mosier, Douglas R., to Minnesota Mining and Manufacturing Company. System for remotely controlling a load. 4,338,649, Cl. 361-139.000.
Mostek Corporation: *See*—
O'Toole, James E., 4,338,679, Cl. 365-203.000.
Young, Ian A., 4,338,571, Cl. 330-84.000.
Motchenbacher, Curtus D.; and Nicholas, Merle E., to Honeywell Inc. Humidity sensor. 4,337,658, Cl. 73-335.000.
Motooka, Setsuzo; Karigane, Yukihiro; Yamazaki, Osamu; and Ochiai, Osamu, to Duskin Franchise Co., Ltd. Selective collecting system of washingly treated articles. 4,338,282, Cl. 422-105.000.
Motorenfabrik Hatz GmbH & Co. KG: *See*—
Hatz, Ernst; and Eibl, Heinz, 4,338,524, Cl. 290-2.000.
Motorola, Inc.: *See*—
Davis, William F.; and Dotson, Robert N., 4,338,646, Cl. 361-18.000.
Gay, Michael J., 4,338,580, Cl. 332-31.00T.
Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., 4,338,506, Cl. 219-121.0LJ.
Parker, Norman W.; and Hilbert, Francis H., 4,338,491, Cl. 179-1.0GS.
Tredennick, Harry L.; and Gunter, Thomas G., 4,338,661, Cl. 364-200.000.
Mozhaev, Igor I.: *See*—
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.
Mreyen, Klaus D.: *See*—
Kopineck, Hermann J.; Bottcher, Wolfgang; Mreyen, Klaus D.; Borchert, Werner; and Deutsch, Volker, 4,337,662, Cl. 73-632.000.

Mucke, Klaus, to Schott Glaswerke. Housing for electrical and electronic components. 4,338,486, Cl. 174-52.00H.

Mueller, Wolfgang: *See*—
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,338,244, Cl. 524-109.000.

Mullen, Richard E.: *See*—
Ehret, Gordon F.; Rowley, William N.; and Mullen, Richard E., 4,338,546, Cl. 315-119.000.

Muller, Adam. Isomerization of alpha acids. 4,338,348, Cl. 426-600.000.

Muller, Wolfgang: *See*—
Munding, German; Muller, Wolfgang; and Strobl, Heinrich, 4,337,685, Cl. 89-7.000.

Multi-Elmac: *See*—
Martin, Richard G.; and Brackney, Maurice R., 4,338,526, Cl. 307-116.000.

Mumford, George V., to Owens-Illinois, Inc. Threaded closure removal tool. 4,337,678, Cl. 81-3.400.

Mundell, Donald D.; and Gowing, John P., to Flex-O-Lators, Inc. Spring base for upholstered seating. 4,337,931, Cl. 267-102.000.

Munding, German; Muller, Wolfgang; and Strobl, Heinrich, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Apparatus for generating a propellant gas. 4,337,685, Cl. 89-7.000.

Mundschenk, David D., to R & D Systems, Inc. Hematology control composition and methods for its use. 4,338,564, Cl. 324-71.0CP.

Murahashi, Takashi: *See*—
Yukawa, Koji; Miyazaki, Masayuki; and Murahashi, Takashi, 4,338,020, Cl. 355-41.000.

Murakami, Hisamichi: *See*—
Mita, Ryuichi; Yamaguchi, Akihiro; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,338,259, Cl. 260-465.50R.

Murakami, Ryoichi: *See*—
Senzaki, Takashi; Murakami, Ryoichi; Yasuhara, Kiyotada; and Takahashi, Masashi, 4,338,141, Cl. 148-6.15Z.

Muranaka, Shigeo; Onoda, Michio; and Sugihara, Kunihiko, to Nissan Motor Co., Ltd. Knocking sensor. 4,337,640, Cl. 73-35.000.

Muranaka, Shigeo: *See*—
Sugihara, Kunihiko; Yoneda, Kenji; and Muranaka, Shigeo, 4,337,641, Cl. 73-35.000.

Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, to Nissan Chemical Industries, Ltd. Isomerization of β-γ-unsaturated alcohol or its ester. 4,338,170, Cl. 204-158.00R.

Murib, Jawad H.; and Inskeep, John M., to National Distillers & Chemical Corp. Hydrolysis of halohydrin or dihalide with HI catalyst. 4,338,290, Cl. 423-481.000.

Murphy, John H.; Brodzinski, John J.; and Horton, Donald D., to Kolmar Laboratories Inc. Method of producing a cosmetic product containing a powder cake. 4,337,859, Cl. 206-37.000.

Murphy, John M.; and Spensley, Robert H., to Exchem Holdings Limited. Cartridge for rock-bolting. 4,338,048, Cl. 405-261.000.

Murphy, Monroe. Trolley pole latch for electric mules. 4,338,498, Cl. 191-66.000.

Myers, Jack H.: *See*—
Miller, Peter S.; and Myers, Jack H., 4,337,904, Cl. 242-75.530.

Myers, Lyle L., to Endowment and Research Foundation at Montana State University. Vaccine for passive immunization against enteric colibacillosis and method of use. 4,338,298, Cl. 424-92.000.

Myers, Richard G.; and Stuckey, James P., to Valmont Industries, Inc. Variable rate fertilizer injection system. 4,337,786, Cl. 137-3.000.

N L B Corp.: *See*—
Goerss, William G., 4,337,784, Cl. 134-34.000.

N P Marketing Corporation: *See*—
Abel, Alan S., 4,338,053, Cl. 410-94.000.

Nabeta, Takeshi; Masui, Takeshi; and Hasegawa, Tsuguo, to Denki Kagaku Kogyo Kabushiki Kaisha. Film for heat sealing and process of heat sealing. 4,338,378, Cl. 428-462.000.

Nacci, George R.; and Pye, Donald G., deceased (by Pye, Sarah W., executrix), to Du Pont de Nemours, E. I., and Company. Magnetic resist printing process, composition and apparatus. 4,338,391, Cl. 430-122.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage-current conversion circuit. 4,338,527, Cl. 307-494.000.

Nagayama, Haruhiko, to Ricoh Co., Ltd. Multiple deflection plate device for liquid jet printer or the like. 4,338,612, Cl. 346-75.000.

Nagel, Ronald L.; and Raventos, Carmen E., to Albert Einstein College of Medicine of Yeshiva University. Treatment of parasitic diseases. 4,338,303, Cl. 424-129.000.

Naito, Nagayoshi: *See*—
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.

Najarian, John. Necktie knot support assembly. 4,337,539, Cl. 2-153.000.

Nakade, Toshiaki: *See*—
Yamada, Mitsuhiko; and Nakade, Toshiaki, 4,338,636, Cl. 358-256.000.

Nakai, Eiichiro; Kojima, Hiroshi; Tanaka, Shoichi; Kai, Toshiyuki; and Hasegawa, Shinichi, to Mitsubishi Kinzoku Kabushiki Kaisha. Process for recovering uranium and/or thorium from a liquid containing uranium and/or thorium. 4,338,286, Cl. 423-12.000.

Nakai, Kozo: *See*—
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.

Nakajima, Kenji: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

Nakamichi, Koya: *See*—
Tada, Masahiro; Ishigaki, Yoshio; Ouchi, Koji; and Nakamichi, Koya, 4,338,606, Cl. 343-744.000.

Nakamura, Hitoshi: *See*—
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,337,572, Cl. 29-792.000.

Nakanishi, Keiichi, to Nissan Motor Company, Limited. Diffuser of centrifugal compressor. 4,338,063, Cl. 415-164.000.

Nakayama, Shouji: *See*—
Takanashi, Yukio; Nakayama, Shouji; and Higuchi, Toshiharu, 4,338,542, Cl. 313-446.000.

Nance-Kivell, Stanley. Apparatus for the storage and transfer of information. 4,338,601, Cl. 340-870.020.

Nancollas, George H.: *See*—
Gill, Jasbir S.; and Nancollas, George H., 4,338,363, Cl. 427-387.000.

Narita, Hiroshi: *See*—
Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, 4,338,558, Cl. 318-802.000.

National Association of Theatre Owners, Inc.: *See*—
Vlahos, Petro, 4,338,165, Cl. 204-7.000.

National Distillers & Chemical Corp.: *See*—
Murib, Jawad H.; and Inskeep, John M., 4,338,290, Cl. 423-481.000.

National Research Development Corporation: *See*—
Broadway, Alexander R. W.; Rawcliffe, Gordon H., deceased; and Rawcliffe, Caroline S., executrix, 4,338,534, Cl. 310-184.000.
Kompfner, Rudolf, 4,337,993, Cl. 350-96.190.

National Semiconductor Corporation: *See*—
Connolly, Joseph J., Jr.; and Cecil, James B., 4,338,590, Cl. 340-347.0CC.

Nava, Pier L. Apparatus for molding reinforced resin products. 4,338,070, Cl. 425-112.000.

Nave, Rafi: *See*—
Palmer, John F.; Ravenel, Bruce W.; and Nave, Rafi, 4,338,675, Cl. 364-748.000.

Naylor, Floyd E., to Phillips Petroleum Company. Catalyst compositions used for copolymerization of isomonoolefins with conjugated dienes. 4,338,219, Cl. 252-428.000.

Nazarian, Miron M.: *See*—
Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexandr A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.

Neal, Maynard J., to Buffalo Forge Company. Adjustable vortex pump. 4,338,062, Cl. 415-213.00A.

Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek: *See*—
Heslinga, Adolf; and Greidanus, Pieter J., 4,338,417, Cl. 525-197.000.

Neill, Jimmie: *See*—
Sellen, Kenneth R.; Neill, Jimmie; Banka, Eugene F.; and Barz, William, 4,338,610, Cl. 346-75.000.

Nelson, George L., to United States of America, Navy. Prostaglandin analogs and process of preparation thereof. 4,338,466, Cl. 568-343.000.

Nelson, William E.; and Lee, Gene D., to Texas Instruments Incorporated. Electrostatic printer having LED array write head. 4,338,615, Cl. 346-160.000.

Neser, Rudolf P., to Woellner-Werke. Fireproof material. 4,338,374, Cl. 428-411.000.

Ness, William A.: *See*—
Flanders, Staunton O.; and Ness, William A., 4,337,893, Cl. 237-7.000.

Neujens, Georges J.: *See*—
Stievenart, Emile F.; Plessers, Hendrik S.; Hellemans, Julianus J.; and Neujens, Georges J., 4,338,522, Cl. 250-468.000.

Newman, Daniel D., to Microwave Radiation Dector Corporation. Microwave leakage detector. 4,338,595, Cl. 340-600.000.

Newton, Alwin B. Solar heat collection and storage system. 4,337,757, Cl. 126-437.000.

Neynaber Chemie GmbH: *See*—
Worschech, Kurt; Wedl, Peter; Loffelholz, Frido; Wegemund, Bernd; and Erwied, Werner, 4,338,226, Cl. 524-302.000.

NGK Insulators, Ltd.: *See*—
Matsuo, Junichi, 4,338,487, Cl. 174-143.000.

Nicholas, Merle E.: *See*—
Motchenbacher, Curtus D.; and Nicholas, Merle E., 4,337,658, Cl. 73-335.000.

Nichols, Wayne C.: *See*—
Stewart, John A.; and Nichols, Wayne C., 4,337,718, Cl. 116-34.00R.

Nicholson, James A. Wall storable table attachment top. 4,337,709, Cl. 108-33.000.

Nicolas, Gerard; Ponthenier, Gerard; and Turc, Gerard, to Commissariat a l'Energie Atomique. Method for constructing an electrical interconnection circuit and apparatus for realizing the method. 4,337,573, Cl. 29-831.000.

Nicoloso, Dante: *See*—
Pham Van, Doan; and Nicoloso, Dante, 4,338,500, Cl. 200-144.0AP.

Nieuwenhuizen, Wouter J.: *See*—
Stenhuis, Derk; and Nieuwenhuizen, Wouter J., 4,338,493, Cl. 179-5.00R.

Nihon Medi-Physics Co., Ltd.: *See*—
Yokoyama, Akira; and Arano, Yasushi, 4,338,248, Cl. 260-112.00R.
Nihon Nosan Kogyo Kabushiki Kaisha: *See*—
Kamimae, Hiroshi; and Ishikawa, Tadashi, 4,338,304, Cl. 424-150.000.
Ning, Tak H.: *See*—
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.
Nippon Dyeing Mfg. Co.: *See*—
Fukuroi, Akio; and Sugimoto, Isao, 4,337,631, Cl. 68-189.000.
Nippon Electric Co., Ltd.: *See*—
Akatsuka, Yasuo, 4,338,678, Cl. 365-174.000.
Fujita, Toshio; Matsumoto, Youichi; and Tagashira, Yoshimi, 4,338,574, Cl. 331-1.00A.
Yokoyama, Yasushi, 4,338,662, Cl. 364-200.000.
Nippon Kasei Chemical Co., Ltd.: *See*—
Unuma, Kunio; Saito, Hiroyasu; Inomata, Jihei; and Takizawa, Saburo, 4,338,461, Cl. 562-507.000.
Nippon Kogaku K.K.: *See*—
Matsui, Sei, 4,338,001, Cl. 350-455.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.
Nippon Shinyaku Co. Ltd.: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.
Nippon Soken, Inc.: *See*—
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,337,643, Cl. 74-35.000.
Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, 4,337,651, Cl. 73-129.000.
Nippon Steel Corporation: *See*—
Ando, Kyoichi, 4,337,928, Cl. 266-197.000.
Shimoyama, Yoshiaki; Koga, Shigenobu; and Ohba, Katsuyki, 4,338,143, Cl. 148-31.550.
Nippon Telegraph & Telephone Public Corporation: *See*—
Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.
Nippondenso Co., Ltd.: *See*—
Hattori, Yoshiyuki; Matsui, Kazuma; and Kinbara, Hiroji, 4,338,081, Cl. 474-201.000.
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.
Saito, Atsunori, 4,337,821, Cl. 165-12.000.
Nishida, Masamitsu: *See*—
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,338,403, Cl. 501-136.000.
Nishihara, Motohisa: *See*—
Sato, Hideo; Kawakami, Kanji; and Nishihara, Motohisa, 4,337,665, Cl. 73-766.000.
Nishijima, Hideo: *See*—
Fukushima, Isao; Nishijima, Hideo; Satoh, Kenji; and Teshima, Tunehiko, 4,338,554, Cl. 318-328.000.
Nishikawa, Masaji, to Olympus Optical Company Limited. Electrophotographic apparatus. 4,338,017, Cl. 355-3.0TR.
Nishimura, Ken-ichi: *See*—
Kitao, Kazuhiko; and Nishimura, Ken-ichi, 4,338,306, Cl. 424-178.000.
Nishino, Hiroshi: *See*—
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,337,652, Cl. 73-146.500.
Nishio, Ken-ichi: *See*—
Okamoto, Hideho; and Nishio, Ken-ichi, 4,338,132, Cl. 75-208.00R.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Composite static induction transistor and integrated circuit utilizing same. 4,338,618, Cl. 357-43.000.
Nissan Chemical Industries, Ltd.: *See*—
Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, 4,338,170, Cl. 204-158.00R.
Nissan Motor Company, Limited: *See*—
Akimune, Yoshio; Ambe, Satoshi; Takao, Hiroshi; and Kimura, Shinji, 4,338,356, Cl. 427-123.000.
Aono, Shigeo; and Takase, Sadao, 4,338,665, Cl. 364-424.000.
Ikeda, Hideo; Teraoka, Masao; and Ishimaru, Junzo, 4,337,953, Cl. 277-152.000.
Kawamoto, Tamio, 4,337,673, Cl. 74-475.000.
Komatsu, Mikiya; Arita, Masashi; and Suzuki, Syunsuke, 4,337,817, Cl. 164-120.000.
Masaki, Kenji, 4,337,746, Cl. 123-489.000.
Muranaka, Shigeo; Onoda, Michio; and Sugihara, Kunihiko, 4,337,640, Cl. 73-35.000.
Nakanishi, Keiichi, 4,338,063, Cl. 415-164.000.
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.
Sugihara, Kunihiko; Yoneda, Kenji; and Muranaka, Shigeo, 4,337,641, Cl. 73-35.000.
Suzuki, Tadashi; and Kishi, Norimasa, 4,338,666, Cl. 364-424.100.
Tamamushi, Masahiro; and Tuchiya, Yoshimasa, 4,337,975, Cl. 296-215.000.
Yoshida, Kenichi, 4,337,642, Cl. 73-35.000.
Nissen, Roland N., to J. I. Case Company. Mounting mechanism for angle dozer blade. 4,337,837, Cl. 172-822.000.
Nitro Nobel AB: *See*—
Granlund, Lars A., 4,338,146, Cl. 149-109.600.
Nittetsu Plant Designing Corporation: *See*—
Ando, Kyoichi, 4,337,928, Cl. 266-197.000.
Nixdorf Computer AG: *See*—
Volke, Hans-Werner, 4,338,585, Cl. 335-274.000.
Noelle, Calvin D. Recovery of oil from oil sands. 4,338,185, Cl. 208-11.0LE.
Noguchi, Hiroki: *See*—
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,338,106, Cl. 55-316.000.
Noguchi, Kohji: *See*—
Tanaka, Yasuyuki; Takeda, Junichi; and Noguchi, Kohji, 4,338,404, Cl. 521-52.000.
Nolte, Wilfried; Keller, Wilfried; and Esser, Heinz, to Bayer Aktiengesellschaft. Process for the production of polychloroprene latices rich in solid matter. 4,338,238, Cl. 524-706.000.
Noma Canada Ltd.: *See*—
Drew, Douglas, 4,338,497, Cl. 191-12.400.
Noma, Tutomu: *See*—
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
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Nomura, Yasushi, to Citizen Watch Co. Ltd. Electronic timepiece. 4,338,680, Cl. 368-29.000.
Nomura, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid reservoir for brake master cylinders. 4,337,792, Cl. 137-558.000.
Nomura, Yoshiyuki: *See*—
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.
Noranda Mines Limited: *See*—
Farge, Jean C.; and Fortin, Robert, 4,338,128, Cl. 75-123.0CB.
Stanley, Robert W.; Monette, Serge; and Kerfoot, Derek G. E., 4,338,168, Cl. 204-108.000.
Nordson Corporation: *See*—
Kennon, James L.; Macartney, Lawrence J.; Crum, Gerald W.; Dunn, John C.; and Hastings, Donald R., 4,338,364, Cl. 427-424.000.
Norris, Theodore C. Adjustably orientable plant hanger. 4,337,916, Cl. 248-558.000.
Northern Telecom Systems Corporation: *See*—
Sims, Dewey M., Jr., 4,337,908, Cl. 242-198.000.
Northrop Corporation: *See*—
Lockett, James H., 4,338,052, Cl. 409-206.000.
Malm, Robert, 4,338,633, Cl. 358-213.000.
Norton Company: *See*—
Dutcher, Richard E., 4,337,750, Cl. 125-15.000.
NRM Corporation: *See*—
Singh, Anand P.; and Shichman, Daniel, 4,338,069, Cl. 425-38.000.
Numabe, Masashi: *See*—
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.
Nyfeler, Robert: *See*—
Heeres, Jan; Backx, Leo; Hubele, Adolf; and Nyfeler, Robert, 4,338,327, Cl. 424-269.000.
Ochiai, Osamu: *See*—
Motooka, Setsuzo; Karigane, Yukihiro; Yamazaki, Osamu; and Ochiai, Osamu, 4,338,282, Cl. 422-105.000.
O'Connor, Brendan F.: *See*—
Tailleur, Andre; and O'Connor, Brendan F., 4,338,028, Cl. 356-240.000.
O'Dell, Leonard J., to Allis-Chalmers Corporation. Bearing for filter bag support arrangement. 4,338,105, Cl. 55-304.000.
Oeckl, Siegfried: *See*—
Schallner, Otto; Oeckl, Siegfried; and Schundehutte, Karl H., 4,338,262, Cl. 260-544.00S.
Oertel, Heinrich: *See*—
Rapp, Egon; and Oertel, Heinrich, 4,338,681, Cl. 368-72.000.
Ofer, Heinrich: *See*—
Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.
Off, Joseph W. A.; and Early, Judson H., to Haggar Company. Apparatus for implanting pockets. 4,337,881, Cl. 223-1.000.
Ogasawara, Takahisa: *See*—
Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,338,240, Cl. 524-284.000.
Ogawa, Hiroshi: *See*—
Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, 4,338,683, Cl. 369-50.000.
Ogino, Toshio: *See*—
Ito, Susumu; and Ogino, Toshio, 4,338,503, Cl. 219-10.770.
Ogura, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Device for disposing of garbage. 4,337,901, Cl. 241-46.00B.
Ohba, Katsuyki: *See*—
Shimoyama, Yoshiaki; Koga, Shigenobu; and Ohba, Katsuyki, 4,338,143, Cl. 148-31.550.
Ohba, Toshihiro; Yasuda, Shuhei; and Kanatani, Yoshiharu, to Sharp Kabushiki Kaisha. Thin-film EL image display panel with power saving features. 4,338,598, Cl. 340-713.000.
Ohlson, John L.: *See*—
Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., 4,338,460, Cl. 562-448.000.

Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, to Hitachi, Ltd. Garnet film for magnetic bubble device. 4,338,372, Cl. 428-336.000.

Ohta, Tokuya: *See*—
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.

Ohta, Yoshimoto, to Tokico Ltd. Hydraulic force multiplying device. 4,337,686, Cl. 91-49.000.

Ohya, Yoichi; and Shimizu, Tadayoshi, to Sumitomo Metal Mining Company, Ltd. Divalent silver oxide cell containing cadmium and tellurium components. 4,338,385, Cl. 429-206.000.

Ojima, Nobutoshi: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

Okada, Hitoshi: *See*—
Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, 4,338,683, Cl. 369-50.000.

Okada, Yoshinori: *See*—
Mohri, Katsuo; and Okada, Yoshinori, 4,338,645, Cl. 360-137.000.

Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, to Hitachi, Ltd. Induction motor control system and method. 4,338,558, Cl. 318-802.000.

Okamoto, Hideho; and Nishio, Ken-ichi, to Sumitomo Chemical Company, Limited. Process for fabricating fiber-reinforced metal composite. 4,338,132, Cl. 75-208.00R.

Okano, Kazumi: *See*—
Suzuki, Kiyoshi; and Okano, Kazumi, 4,338,389, Cl. 430-94.000.

O'Keefe, David B.: *See*—
Steiner, Gordon L.; O'Keefe, David B.; and Miller, Robert C., 4,338,597, Cl. 340-706.000.

Okuda, Kanemasa: *See*—
Katsube, Hideo; Gamo, Gotaro; Kinoshita, Mitsuo; Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,338,505, Cl. 219-69.00M.

Okuda, Naoki; and Tanaka, Kazuo, to Kobe Steel, Limited. Melting flux composition for submerged arc welding. 4,338,142, Cl. 148-26.000.

Olin Corporation: *See*—
Chandalia, Kiran B.; and Barnowski, Henry G., 4,338,407, Cl. 521-99.000.
Milford, Alan H.; and Proulx, Oliver J., 4,338,072, Cl. 425-371.000.

Olson, Raymond G., to Baxter Travenol Laboratories, Inc. Pressure infusion module. 4,337,769, Cl. 128-214.00F.

Olszewski, Daniel P.: *See*—
Gell, Harold A.; and Olszewski, Daniel P., 4,337,591, Cl. 43-42.090.

Olympus Optical Co., Ltd.: *See*—
Fujibayashi, Kenji, 4,338,529, Cl. 307-518.000.
Fujibayashi, Kenji, 4,338,639, Cl. 360-66.000.
Nishikawa, Masaji, 4,338,017, Cl. 355-3.0TR.
Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, 4,338,279, Cl. 422-64.000.
Orita, Shunichi, 4,338,638, Cl. 360-60.000.

Omron Tateisi Electronics, Inc.: *See*—
Akira, Abe; Kimura, Shoji; and Yoshinori, Miyawaki, 4,337,778, Cl. 128-680.000.

Omura, Katsumi: *See*—
Kyo, Sunao; Omura, Katsumi; and Hino, Ken-ichi, 4,338,478, Cl. 585-606.000.

Oneida General Corp.: *See*—
Rich, Brett, 4,337,914, Cl. 246-428.000.

Onoda, Michio: *See*—
Muranaka, Shigeo; Onoda, Michio; and Sugihara, Kunihiko, 4,337,640, Cl. 73-35.000.

Onomichi Kumika K.K.: *See*—
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.

Ootsuka, Yoshinori: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,337,643, Cl. 74-35.000.

Op Het Veld, Sebastianus J.: *See*—
Asmus, Jean-Pierre; Soto, Joseph; and Op Het Veld, Sebastianus J., 4,338,623, Cl. 358-22.000.

Oprandis, Pierre; and Romeas, Rene, to Thomson-CSF. Process and apparatus for coding binary signals for numbering images or pictures stored on a recording medium for stop mode reproduction. 4,338,629, Cl. 358-128.500.

Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, to Olympus Optical Company Limited. Automatic analyzing apparatus. 4,338,279, Cl. 422-64.000.

Orita, Shunichi, to Olympus Optical Co., Ltd. Tape recorder. 4,338,638, Cl. 360-60.000.

Osaki, Yasunori: *See*—
Ikeguchi, Nobuyuki; and Osaki, Yasunori, 4,338,373, Cl. 428-383.000.

Ota, Yoshihiko, to Victor Company of Japan, Ltd. Video signal, speed-change reproducing system. 4,338,631, Cl. 358-127.000.

Otis Elevator Company: *See*—
Kritzler, Steven, 4,338,376, Cl. 428-417.000.
Wierschke, Gilbert W., 4,338,650, Cl. 361-139.000.

O'Toole, James E., to Mostek Corporation. Row driver circuit for semiconductor memory. 4,338,679, Cl. 365-203.000.

Otsuka Chemical Co., Ltd.: *See*—
Manabe, Isao; and Inubushi, Akiyoshi, 4,338,209, Cl. 252-75.000.

Otsuka, Katsuyuki; and Miyo, Hiroaki, to Doryokuro Kakunenryo Kahatsu Jigyodan. Device for removing radioactive particles in moist gas. 4,338,102, Cl. 55-185.000.

Ouchi, Hiromu: *See*—
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; and Ouchi, Hiromu, 4,338,403, Cl. 501-136.000.

Ouchi, Koji: *See*—
Tada, Masahiro; Ishigaki, Yoshio; Ouchi, Koji; and Nakamichi, Koya, 4,338,606, Cl. 343-744.000.

Overman, Paulus T. J.; and Slats, Henricus J., to Veg-Gasinstituut N.V. Electric control device for a central heating boiler. 4,337,891, Cl. 236-9.00A.

Owens-Corning Fiberglas Corporation: *See*—
Babbitt, William M., 4,338,110, Cl. 65-1.000.
Bhattacharyya, Rabindra K.; and Belt, James S., 4,337,666, Cl. 73-818.000.
Hohman, Charles M.; and Propster, Mark A., 4,338,113, Cl. 65-27.000.
Lin, Kingso C., 4,338,361, Cl. 427-299.000.
Marzocchi, Alfred; Bolen, Charles E.; Harrington, Edward R.; and Roberts, Michael G., 4,338,231, Cl. 523-214.000.
Propster, Mark A., 4,338,112, Cl. 65-27.000.

Owens-Illinois, Inc.: *See*—
Farkas, Daniel S., 4,338,115, Cl. 65-29.000.
Guinle, David P., 4,337,869, Cl. 215-201.000.
Huff, Norman T.; Shetterly, Donivan M.; and Kalisher, Lawrence I., 4,338,116, Cl. 65-29.000.
Miller, Peter S.; and Myers, Jack H., 4,337,904, Cl. 242-75.530.
Mumford, George V., 4,337,678, Cl. 81-3.400.

Oxley, Jerry L. Pressure release device for a transmission brake. 4,337,854, Cl. 192-13.00R.

Oyama, Shigeaki: *See*—
Kohzai, Yoshinori; Oyama, Shigeaki; and Katsuzawa, Yukio, 4,338,535, Cl. 310-186.000.

Ozaki, Juro: *See*—
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,337,572, Cl. 29-792.000.

Ozawa, Toshiaki: *See*—
Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, 4,338,035, Cl. 400-144.200.

Ozeki, Jiro, to Slidex Corporation. Overhead projector. 4,338,006, Cl. 353-85.000.

Ozer, Theodore; Yankovoy, Alexander; and Imbessi, James, to Boeing Company, The. Method and tool for generating holes in composite materials. 4,338,050, Cl. 408-1.00R.

Paaren, Herbert E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,338,250, Cl. 260-397.200.

Pacific Controls Incorporated: *See*—
Gray, Samuel A., 4,338,504, Cl. 219-69.00M.

Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., to Eli Lilly and Company. Antiviral method employing thiazinyl benzimidazole derivatives. 4,338,315, Cl. 424-246.000.

Paget, Charles J.; Chamberlin, James W., both of; and Wikel, James H., to Eli Lilly and Company. Antiviral method employing 1-sulfonylbenzimidazoles. 4,338,329, Cl. 424-270.000.

Pai, Damodar M.: *See*—
Limburg, William W.; Pai, Damodar M.; and Pearson, James M., 4,338,222, Cl. 252-500.000.

Palacino, Giovanni; Garzulano, Gianfranco; and Garagiola, Adelmo. Invisible stitch hemming for tubular material. 4,337,713, Cl. 112-153.000.

Pallos, Ferenc M., to Stauffer Chemical Company. Halo-substituted thionoacyl ketone herbicidal antidotes. 4,338,120, Cl. 71-98.000.

Palmer, John F.; Ravenel, Bruce W.; and Nave, Rafi, to Intel Corporation. Numeric data processor. 4,338,675, Cl. 364-748.000.

Panduit Corp.: *See*—
Caveney, Jack E., 4,337,934, Cl. 269-77.000.

Panelgraphic Corporation: *See*—
Russell, Raymond J., 4,338,269, Cl. 264-22.000.

Panzera, Carlino: *See*—
Erickson, Arnold R.; Panzera, Carlino; and Tolokan, Robert P., 4,338,380, Cl. 428-594.000.

Paparizos, Christos: *See*—
Shaw, Wilfrid G.; and Paparizos, Christos, 4,338,463, Cl. 562-599.000.

Park, Rodney W. Squeezing device. 4,337,879, Cl. 222-102.000.

Parker, Norman W.; and Hilbert, Francis H., to Motorola Inc. Compatible AM stereophonic system. 4,338,491, Cl. 179-1.0GS.

Parkyn, William A., Jr.: *See*—
Popovich, John M.; Parkyn, William A., Jr.; and Pelka, David G., 4,337,759, Cl. 126-438.000.

Parris, Joe P., to Cameron Iron Works, Inc. Valve. 4,337,920, Cl. 251-357.000.

Partington, Everett J. Rotary planer. 4,337,811, Cl. 145-4.200.

Pate, John R. Skateboard holder. 4,337,883, Cl. 224-250.000.

Patel, Natu R., to Gulf Oil Corporation. Benzoyl arylthioureas and use as plant growth regulators. 4,338,257, Cl. 260-454.000.

Patel, Raman: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,338,411, Cl. 525-145.000.
Coran, Aubert Y.; and Patel, Raman, 4,338,413, Cl. 525-179.000.

Pathfinder Graphic Associates, Inc.: *See*—
Etchell, Gordon; and Frank, Cyril W., 4,337,700, Cl. 101-415.100.

Pavlov, Mikhail V.: *See*—
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.

Pawson, Beverly A.: *See—*
Chan, Ka-Kong; and Pawson, Beverly A., 4,338,253, Cl. 260-408.000.

Payne, Robert W.; and Smith, Wesley F., to Dynacom International, Inc. Scrambled video communication system. 4,338,628, Cl. 358-120.000.

PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Schirmann, Jean-Pierre, 4,338,260, Cl. 260-502.00R.

Pearson, James M.: *See—*
Limburg, William W.; Pai, Damodar M.; and Pearson, James M., 4,338,222, Cl. 252-500.000.

Pearson, James S.: *See—*
Rose, John; and Pearson, James S., 4,337,545, Cl. 14-71.100.

Pechner, Murray. Temperature regulator for oil cooling system. 4,337,737, Cl. 123-196.0AB.

Peck, Gene E.; and Cooperberg, Bruce, to Insta-Print, Incorporated. Diffusion-transfer processor. 4,338,016, Cl. 354-303.000.

Peerless of America, Inc.: *See—*
Kritzer, Richard W., 4,337,826, Cl. 165-151.000.

Pelka, David G.: *See—*
Popovich, John M.; Parkyn, William A., Jr.; and Pelka, David G., 4,337,759, Cl. 126-438.000.

Pellegata, Renato; and Gandolfi, Carmelo, to Farmitalia Carlo Erba. Cyclopenta[b]furan-2-one and -2-ol intermediates for 16-fluoro-13,14-didehydro-prostaglandins. 4,338,249, Cl. 549-214.000.

Pellegata, Renato; and Gandolfi, Carmelo, to Farmitalia Carlo Erba. Fluoro-prostaglandins. 4,338,332, Cl. 424-305.000.

Pelton, Arthur D.; and Rivier, Michel, to Canadian Patents & Development Limited. Slip-casting system. 4,338,272, Cl. 264-86.000.

Penick, Ib: *See—*
Volkert, John K.; Penick, Ib; and Volkert, Robert B., 4,337,589, Cl. 40-124.100.

Penn-Field Stove, Inc.: *See—*
McGinn, Terrance E., 4,337,753, Cl. 126-287.000.

Pennewiss, Horst: *See—*
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,338,418, Cl. 525-281.000.

Pennington, Nicholas D.; and Haddad, James H., to Mobil Oil Corporation. Converting alcohols to hydrocarbons. 4,338,475, Cl. 585-408.000.

Pennwalt Corporation: *See—*
Vidal, Frederick D.; and Jayaraman, Anantharaman, 4,338,343, Cl. 426-331.000.

Peppler, William; and Skinner, Mark, to Chore-Time Equipment, Inc. Traveling hopper feed delivery system. 4,337,729, Cl. 119-52.00B.

Perego, Ambrogio, to BBC, Brown, Boveri & Company Ltd. Pressurized face seal with initial run-in surface. 4,337,951, Cl. 277-27.000.

Perlin, Alfred R., to Metatech Corporation. Micro surgical clip. 4,337,774, Cl. 128-325.000.

Perrine, Warren L. Shaft rotation sensor. 4,338,517, Cl. 250-231.0SE.

Persson, Carl G. A.: *See—*
Kjellin, Per G.; and Persson, Carl G. A., 4,338,319, Cl. 424-253.000.

Perzley, William; and Yen-Chen, Yung-Ming, to Unimation, Inc. Off-line teach assist apparatus and on-line control apparatus. 4,338,672, Cl. 364-513.000.

Pesce, Amadeo J.: *See—*
Michael, Jacob G.; and Pesce, Amadeo J., 4,338,297, Cl. 424-91.000.

Peterson, William H., to Pullman Incorporated. Railway car superstructure frame. 4,337,708, Cl. 105-397.000.

Petersson, Tomas, to Frigoscandia AB. Apparatus for handling palletized goods stacked in tiers. 4,338,055, Cl. 414-114.000.

Petitjean, Christian H., to Le Materiel Telephonique Thomson-CSF. Pulsed coherent doppler radar with frequency agility. 4,338,604, Cl. 343-17.20R.

Petrassevich, Cornel H., to United States of America, Health, Education and Welfare. Illuminated surgical instrument. 4,337,763, Cl. 128-20.000.

Petrich, Dennis M., to Control Data Corporation. Delay lock loop. 4,338,569, Cl. 328-155.000.

Petrocarbon Developments Ltd.: *See—*
Isalski, Wieslaw H.; and Ashton, Gregory J., 4,338,108, Cl. 62-22.000.

Pfleiderer, Hans-Jorg: *See—*
Herbst, Heiner; and Pfleiderer, Hans-Jorg, 4,338,515, Cl. 250-214.00R.

Pham Van, Doan; and Nicoloso, Dante, to Societe Anonyme dite: Delle-Alsthom. Device for switching in a resistance when a circuit breaker closes a circuit. 4,338,500, Cl. 200-144.0AP.

Philippe, Gerard G., to Carlier, Philippe & Melkye (H.K.) Limited. Method and apparatus for protecting extracts obtained by tapping trees. 4,337,595, Cl. 47-10.000.

Phillips, Paul E., to McGraw-Edison Company. Floor polisher support. 4,337,546, Cl. 15-49.00R.

Phillips Petroleum Company: *See—*
Naylor, Floyd E., 4,338,219, Cl. 252-428.000.

Phillips, William A. High temperature metal heat recuperation wheel. 4,337,819, Cl. 165-9.000.

Photon Power, Inc.: *See—*
Lampkin, Curtis M., 4,338,078, Cl. 432-11.000.

Physical Systems, Inc.: *See—*
Hutter, Charles G., III, 4,338,151, Cl. 156-344.000.

Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, to Tyrolit Schleifmittelwerke Swarovski K.G. Method of coating fibrous reinforcement material. 4,338,357, Cl. 427-195.000.

Pieniak, Heinz A.; and Repke, Virginia L., to Johnson & Johnson Baby Products Company. Conformable disposable diaper having reinforced portions. 4,337,771, Cl. 128-287.000.

Pieper, Henner: *See—*
Rach, Heinz-Dieter; and Pieper, Henner, 4,337,813, Cl. 152-209.00R.

Pierce, Linden W., to General Electric Company. Method of making integrally formed transformer cooling ducts. 4,337,569, Cl. 29-605.000.

Pierce, Linden W., to General Electric Company. Leak detector for vaporization cooled transformers. 4,337,820, Cl. 165-11.00R.

Piet, Meyer. High pressure coupling. 4,337,807, Cl. 141-383.000.

Pike, John E.: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,338,325, Cl. 424-285.000.

Pilz, Karl-Heinz; Grater, Wolfgang; and Mayer, Hans-Dietrich, to Richard Hirschmann, Radiotechnisches Werk. Automatic control system for d-c motor. 4,338,552, Cl. 318-266.000.

Pioneer Electronic Corporation: *See—*
Mizumoto, Kastuji, 4,338,551, Cl. 318-254.000.

Pirson, Ewald; Schmidlkofer, Jakob; and Innertsberger, Ernst, to Wacker-Chemie GmbH. Antifoams. 4,338,217, Cl. 252-358.000.

Pitha, Jay R. Solar collector block. 4,337,755, Cl. 126-431.000.

Pitney Bowes Inc.: *See—*
Cruz-Uribe, Antonio S., 4,338,613, Cl. 346-75.000.
Foster, Dean H.; and Silverman, Harold, 4,337,609, Cl. 53-569.000.

Pizzuti, Donato F., to Polaroid Corporation. Switching arrangement for automatically effecting select photographic functions. 4,338,008, Cl. 354-21.000.

Pizzuti, Donato F., to Polaroid Corporation. Photographic camera apparatus. 4,338,011, Cl. 354-196.000.

Plessers, Hendrik S.: *See—*
Stievenart, Emile F.; Plessers, Hendrik S.; Hellemans, Julianus J.; and Neujens, Georges J., 4,338,522, Cl. 250-468.000.

Pneumo Corporation: *See—*
Bauman, Ralph H., 4,338,479, Cl. 136-229.000.

Pokrovsky, Sergei V.: *See—*
Lisin, Vladimir N.; Pavlov, Mikhail V.; Laschenov, Jury V.; Gusev, Stanislav I.; Kozlov, Lev V.; Pokrovsky, Sergei V.; and Mozhaev, Igor I., 4,338,657, Cl. 363-68.000.

Polaroid Corporation: *See—*
Holmes, William A., 4,338,015, Cl. 354-275.000.
Pizzuti, Donato F., 4,338,008, Cl. 354-21.000.
Pizzuti, Donato F., 4,338,011, Cl. 354-196.000.

Pomerantz, Allen J., to General Motors Corporation. Closed loop air/fuel ratio control system with oxygen sensor signal compensation. 4,337,745, Cl. 123-440.000.

Ponthenier, Gerard: *See—*
Nicolas, Gerard; Ponthenier, Gerard; and Turc, Gerard, 4,337,573, Cl. 29-831.000.

Popkes, Opal L. Beverage strainers. 4,338,338, Cl. 426-82.000.

Popovich, John M.; Parkyn, William A., Jr.; and Pelka, David G., to Popovich, John M.; Parkyn, William A., Jr.; and Pelka, David G. Radiant energy concentration by optical total internal reflection. 4,337,759, Cl. 126-438.000.

Pospisil, Borivoj: *See—*
Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, 4,338,509, Cl. 219-121.0PR.

PPG Industries, Inc.: *See—*
Allersma, Ties; and Simpson, James E., 4,338,127, Cl. 75-93.00R.
Das, Balbhadra; and Moore, L. Dow, 4,338,233, Cl. 523-410.000.
Moore, L. Dow; and Das, Balbhadra, 4,338,234, Cl. 523-206.000.
Savolskis, Edward P.; and Sanders, Terrence L., 4,338,117, Cl. 65-158.000.

Preiss, Michael; Konig, Hans-Bodo; Metzger, Karl G.; and Feyen, Peter, to Bayer Aktiengesellschaft. 2-Hetero-acetamido-cephalosporinates. 4,338,434, Cl. 542-420.000.

President and Fellows of Harvard College: *See—*
Gilbert, Walter; and Talmadge, Karen, 4,338,397, Cl. 435-68.000.

Presley, Glen T. Vehicle power control system. 4,337,587, Cl. 37-83.000.

Presser, Adolph, to RCA Corporation. Electronically tunable resonator circuit. 4,338,582, Cl. 333-175.000.

Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., to Markem Corporation. Electrostatic print head. 4,338,614, Cl. 346-155.000.

Price, Michael C.: *See—*
Weil, Thomas A.; Dzadzic, Peter M.; Shih, Chien-Cheng J.; and Price, Michael C., 4,338,399, Cl. 435-99.000.

Prince Manufacturing Corporation: *See—*
Hoover, Robert A., 4,337,687, Cl. 91-401.000.

Pringle, William L. Brake support assembly. 4,337,851, Cl. 188-330.000.

Procter & Gamble Company, The: *See—*
Brand, Larry M., 4,338,346, Cl. 426-548.000.
Evans, Stephen F.; Ludwa, Raymond J.; and Adalsteinsson, Orn, 4,338,366, Cl. 428-76.000.
Spadini, Gianfranco L.; Crisp, Peter N.; and McRitchie, Allan C., 4,338,204, Cl. 252-8.750.
Stiros, Paul, 4,338,211, Cl. 252-142.000.

Propster, Mark A., to Owens-Corning Fiberglas Corporation. Method for controlling particulate emissions from a glass furnace. 4,338,112, Cl. 65-27.000.

Propster, Mark A.: *See—*
Hohman, Charles M.; and Propster, Mark A., 4,338,113, Cl. 65-27.000.

Proulx, Oliver J.: *See—*
Milford, Alan H.; and Proulx, Oliver J., 4,338,072, Cl. 425-371.000.

Puebla, Candido: *See—*
Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, 4,338,495, Cl. 179-99.00M.

Puff, Roger M.: *See—*
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Pullman Incorporated: *See—*
Peterson, William H., 4,337,708, Cl. 105-397.000.

Purdue Research Foundation: *See—*
Mailander, Michael P.; Krutz, Gary W.; and Huggins, Larry F., 4,337,611, Cl. 56-10.200.

Pye, Donald G., deceased: *See—*
Nacci, George R.; and Pye, Donald G., deceased, 4,338,391, Cl. 430-122.000.

Pye, Sarah W., executrix: *See—*
Nacci, George R.; and Pye, Donald G., deceased, 4,338,391, Cl. 430-122.000.

Quade, Marshall L.: *See—*
Dean, Earl E.; Quade, Marshall L.; and Temple, William F., 4,337,612, Cl. 56-98.000.

Qualeatti, Gail M., to UOP Inc. Catalyst for the reduction of unsaturated organic acids. 4,338,221, Cl. 252-455.00R.

Quaschner, Wolfgang, to Kollmorgen Technologies Corporation. Process for making circuit boards having rigid and flexible areas. 4,338,149, Cl. 156-248.000.

Quayle, Joshua C.: *See—*
Turner, Mervyn E. D.; and Quayle, Joshua C., 4;338,097, Cl. 23-230.00C.

Queyroix, Christian A.: *See—*
Lautrette, Jean-Claude; and Queyroix, Christian A., 4,338,193, Cl. 210-401.000.

R & D Systems, Inc.: *See—*
Mundschenk, David D., 4,338,564, Cl. 324-71.0CP.

Rach, Heinz-Dieter; and Pieper, Henner, to Continental Gummi-Werke Aktiengesellschaft. Tread configuration of pneumatic tires for motor vehicles. 4,337,813, Cl. 152-209.00R.

Radcliffe, Charles R.; and Davis, James A., to Bendix Corporation, The. Engine roughness sensor. 4,337,647, Cl. 73-116.000.

Radeck, Fritz: *See—*
Voelker, Wolfgang; Schmitt, Alfons; and Radeck, Fritz, 4,337,725, Cl. 118-665.000.

Rademacher, Paul: *See—*
DiMatteo, Paul; Segnini, Robert; and Rademacher, Paul, 4,337,566, Cl. 29-558.000.

Radiation Monitoring Devices, Inc.: *See—*
Turcotte, Richard L., 4,338,362, Cl. 427-314.000.

Raftopoulos, Demetrios D.; and Baril, James D. Method of and device for placing a barrier in a cavity provided in a bone shaft. 4,337,773, Cl. 128-305.000.

Ragle, Herbert U., to Burroughs Corporation. Reel signature and associated techniques. 4,337,659, Cl. 73-432.00R.

Rahimzadeh, Abofazl: *See—*
Kennedy, Harry L.; Kesaree, Prakash M.; and Rahimzadeh, Abofazl, 4,337,802, Cl. 141-1.000.

Rangel, Edward, to Heim Universal Corporation. Rod end and a method and apparatus for the manufacture thereof. 4,337,559, Cl. 29-149.50B.

Rapp, Egon; and Oertel, Heinrich, to Gebruder Junghans GmbH. Electric timing clock. 4,338,681, Cl. 368-72.000.

Rapp, Eugen. Device for measuring depth and temperature especially for tanks or the like. 4,337,656, Cl. 73-290.00V.

Rasch, Walter; Caspers, Karl-Heinz; Wiebicke, Klaus; and Albert, Max, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of producing cylinder heads, and cylinder heads produced thereby. 4,337,736, Cl. 123-193.00H.

Rasmussen, David H.: *See—*
Johnson, William C.; Rasmussen, David H.; and Lee, Richard H., 4,337,805, Cl. 141-71.000.

Rathmell, William G.: *See—*
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,338,318, Cl. 424-251.000.

Rauckhorst, James E.; and Skingle, Thomas J., to Acme-Cleveland Corporation. Method of making die-cast masonry drill. 4,337,677, Cl. 76-108.00A.

Raue, Roderich: *See—*
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,338,258, Cl. 260-456.00A.

Rauhut, Michael M.: *See—*
Tseng, Shin-Shyong; and Rauhut, Michael M., 4,338,213, Cl. 252-188.3CL.

Raven, Peter J.: *See—*
McKenna, Nicholas M. Q.; and Raven, Peter J., 4,337,741, Cl. 123-228.000.

Ravenel, Bruce W.: *See—*
Palmer, John F.; Ravenel, Bruce W.; and Nave, Rafi, 4,338,675, Cl. 364-748.000.

Raventos, Carmen E.: *See—*
Nagel, Ronald L.; and Raventos, Carmen E., 4,338,303, Cl. 424-129.000.

Rawcliffe, Caroline S., executrix: *See—*
Broadway, Alexander R. W.; Rawcliffe, Gordon H., deceased; and Rawcliffe, Caroline S., executrix, 4,338,534, Cl. 310-184.000.

Rawcliffe, Gordon H., deceased: *See—*
Broadway, Alexander R. W.; Rawcliffe, Gordon H., deceased; and Rawcliffe, Caroline S., executrix, 4,338,534, Cl. 310-184.000.

Rawcliffe, Sheila M., executrix: *See—*
Broadway, Alexander R. W.; Rawcliffe, Gordon H., deceased; and Rawcliffe, Caroline S., executrix, 4,338,534, Cl. 310-184.000.

RCA Corporation: *See—*
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Landry, Norman R., 4,338,609, Cl. 343-786.000.
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Redda, Kinfe: *See—*
Knaus, Edward E.; Corleto, Linda A.; and Redda, Kinfe, 4,338,445, Cl. 546-270.000.

Regal International, Inc.: *See—*
Thomerson, Clarence, 4,338,046, Cl. 405-212.000.

Regelman, Dale F.: *See—*
Alberino, Louis M.; and Regelman, Dale F., 4,338,428, Cl. 528-73.000.

Reghi, Gary A., to Hooker Chemicals & Plastics Corp. Coating composition and method. 4,338,140, Cl. 148-6.14R.

Regie Nationale des Usines Renault: *See—*
Cloarec, Laurent, 4,338,038, Cl. 403-56.000.

Regimbal, Richard R.: *See—*
Becker, Floyd W.; and Regimbal, Richard R., 4,337,563, Cl. 29-451.000.

Regnier, Gilbert; Dhainaut, Alain; and Duhault, Jacques, to Science Union et Cie. Piperidylbenzimidazolinone derivatives. 4,338,323, Cl. 424-266.000.

Reichmann, Wolfgang: *See—*
Konig, Klaus; Reichmann, Wolfgang; and Schonfelder, Manfred, 4,338,431, Cl. 528-272.000.

Reif, Henry E.; and Schwedock, Jeffrey P., to Suntech, Inc. Shale oil process. 4,338,186, Cl. 208-89.000.

Reiter, Paul J.: *See—*
Romanczuk, Walter N.; Reiter, Paul J.; and Watkins, William R., 4,338,652, Cl. 361-388.000.

Relational Memory Systems, Inc.: *See—*
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Reliance Electric Company: *See—*
DeLeu, Robert P., 4,338,036, Cl. 403-16.000.

Reng, Leonhard: *See—*
Blaschke, Felix; and Reng, Leonhard, 4,338,559, Cl. 318-805.000.

Repke, Virginia L.: *See—*
Pieniak, Heinz A.; and Repke, Virginia L., 4,337,771, Cl. 128-287.000.

Republic Steel Corporation: *See—*
Reusser, Hans E., 4,337,606, Cl. 52-520.000.

Research Foundation of State University of New York, The: *See—*
Gill, Jasbir S.; and Nancollas, George H., 4,338,363, Cl. 427-387.000.

Research Products Corporation: *See—*
Flower, John W., 4,338,266, Cl. 261-94.000.

Reusser, Hans E., to Republic Steel Corporation. Metal panel and mounting structure. 4,337,606, Cl. 52-520.000.

Reuter Technologie GmbH: *See—*
Lohberg, Werner, 4,337,731, Cl. 123-25.00B.

Reverchon, Bernard: *See—*
Grandcolas, Jean; Harmelin, Guy; Lazzarini, Roger; and Reverchon, Bernard, 4,338,080, Cl. 432-115.000.

Reynolds, Blake: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.

Rhoades, Rex V.; and Geer, James L., to Rohrback Corporation. Corrosion measurement with secondary temperature compensation. 4,338,563, Cl. 324-65.0CR.

Rhodes, Melvin H., to Rockwell International Corporation. Pulse pair servo apparatus. 4,338,555, Cl. 318-561.000.

Rhodes, Robert P.: *See—*
Engel, Steven J.; Marsh, Richard E.; and Rhodes, Robert P., 4,338,589, Cl. 340-347.0CC.

Rhodes, Sammy J., deceased (by Aurora, The Old Second National bank of, executor), to Caterpillar Tractor Co. Pressure regulating hydraulic circuit and valve. 4,337,787, Cl. 137-101.000.

Rhodes, Smith A., to Communications Satelite Corp. Frequency shift offset quadrature modulation and demodulation. 4,338,579, Cl. 332-21.000.

Rhone-Poulenc Industries: *See—*
Granjon, Robert; and Fournier, Michel, 4,338,470, Cl. 568-723.000.

Rib Loc Hong Kong Limited: *See—*
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,337,564, Cl. 29-453.000.

Rich, Brett, to Oneida General Corp. Railway switch stand cover. 4,337,914, Cl. 246-428.000.

Richard Hirschmann, Radiotechnisches Werk: *See—*
Pilz, Karl-Heinz; Grater, Wolfgang; and Mayer, Hans-Dietrich, 4,338,552, Cl. 318-266.000.

Richardson Chemical Company: *See—*
Jutte, Gottfried W.; and McHugh, John V., 4,338,383, Cl. 429-88.000.

Richter, George N.: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.

Richter, Johan C. F. C.; and Sherman, Michael I., to Kamyr, Inc. High pressure feeder pivotal center screen. 4,338,049, Cl. 406-63.000.

Ricoh Company, Ltd.: *See—*
Koizumi, Yutaka, 4,338,386, Cl. 430-49.000.
Nagayama, Haruhiko, 4,338,612, Cl. 346-75.000.
Sakai, Kiyoshi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,338,388, Cl. 430-59.000.

Riedel, Rudolf: *See—*
Schlosser, Hermann; Zelder, Felix; Riedel, Rudolf; and Borberg, Klaus, 4,337,608, Cl. 53-471.000.

Rikagaku Kenkyusho: *See—*
Yamada, Akira; Tanno, Takashi; Wehle, Dieter; and Kaneko, Masao, 4,338,291, Cl. 423-648.00R.

Riker Laboratories, Inc.: *See—*
Heasley, Ralph A., 4,338,311, Cl. 424-233.000.

Rinderle, James R.: *See—*
Suh, Nam P.; and Rinderle, James R., 4,338,068, Cl. 425-144.000.

Ripert, Roger L., to Grove Valve and Regulator Company. Bearing retainers for a rotary valve. 4,337,919, Cl. 251-304.000.

Ritchie, Leon T.: *See—*
Asick, John C.; Landis, John M.; and Ritchie, Leon T., 4,337,989, Cl. 339-143.00R.

Rittenhouse, John F., to Eltra Corporation. Curing of tetrabasic lead pasted battery electrodes. 4,338,163, Cl. 204-2.100.

Riuli, Arduino E.; Anastasia, Robert W.; and Kopacz, Bernard F., to Becton, Dickinson and Company. Medical gas humidifier with audible pressure relief valve and method of use. 4,338,267, Cl. 261-121.00R.

Rivier, Michel: *See—*
Pelton, Arthur D.; and Rivier, Michel, 4,338,272, Cl. 264-86.000.

Rizzuto, Anthony B.: *See—*
Chen, Andy C. C.; Lang, Clifford E., Jr.; Graham, Charles P.; and Rizzuto, Anthony B., 4,338,350, Cl. 426-658.000.

Roba, Joseph L.: *See—*
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Robert Bosch GmbH: *See—*
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Seeger, Karl; Jundt, Werner; Mezger, Manfred; Kiencke, Uwe; Wesemeyer, Jurgen; Haubner, Georg; and Meier, Werner, 4,337,744, Cl. 123-416.000.

Roberts, Michael G.: *See—*
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Robinson, Brian: *See—*
McDonald, William J.; and Robinson, Brian, 4,337,557, Cl. 28-250.000.

Rockford Carbide Corporation: *See—*
Flueckiger, Rudolph H., 4,337,562, Cl. 29-402.110.

Rockwell International Corporation: *See—*
Lienert, Gerold, 4,337,632, Cl. 72-53.000.
Rhodes, Melvin H., 4,338,555, Cl. 318-561.000.

Rodgers, David P.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,338,663, Cl. 364-200.000.

Rodriguez, Basilides. Jogger's aid. 4,337,938, Cl. 272-93.000.

Roeder, Robert J., to Kimberly-Clark Corporation. Adhesive backed sanitary napkin. 4,337,772, Cl. 128-290.00R.

Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., to Sperry Corporation. Semi-active guidance system. 4,338,602, Cl. 343-10.000.

Rogers, Frank A. Structural member. 4,338,381, Cl. 428-575.000.

Rogers, Walter C., Jr.; and Hoffman, David S., to Royal Development Company, Inc. Three-way handle-operated wall-avoiding recliner chair. 4,337,977, Cl. 297-85.000.

Rohm GmbH: *See—*
Jost, Heinz; Knoell, Hellmuth; Markert, Gerhard; and Pennewiss, Horst, 4,338,418, Cl. 525-281.000.

Rohm, Robert F.; and Berge, Olav, to Brown International Corporation. Feeder mechanism for controlling delivery of fruit to a juice extractor. 4,337,865, Cl. 209-548.000.

Rohrback Corporation: *See—*
Rhoades, Rex V.; and Geer, James L., 4,338,563, Cl. 324-65.0CR.

Rolland, Burton A., to Hurco Manufacturing Company, Inc. Parallel positioning device. 4,337,637, Cl. 72-461.000.

Rollmann, Louis D., to Mobil Oil Corporation. Sorbent for removing metals from fluids. 4,338,288, Cl. 423-210.000.

Rolls-Royce Limited: *See—*
Hughes, Eric; and McKnight, Donald, 4,337,618, Cl. 60-39.550.
Stewart, Peter A. E., 4,338,520, Cl. 250-356.000.

Rollwash Italiana S.p.A.: *See—*
Spinazzi, Angelo, 4,338,218, Cl. 252-361.000.

Romanczuk, Walter N.; Reiter, Paul J.; and Watkins, William R., to Westinghouse Electric Corp. Stack module and stack loader therefor. 4,338,652, Cl. 361-388.000.

Romeas, Rene: *See—*
Oprandis, Pierre; and Romeas, Rene, 4,338,629, Cl. 358-128.500.

Rosan, Alan M.: *See—*
Yardley, James T.; Rosan, Alan M.; and Menger-Hammond, Eva L., 4,338,173, Cl. 204-162.00R.

Rose, John; and Pearson, James S. Bridges for providing access from a water-borne craft to the shore. 4,337,545, Cl. 14-71.100.

Rosenberg, Harry; and Small, LaVerne D., to University of Nebraska, The Board of Regents of the. Esters of 6'-hydroxycinchonine, and a method of treating arrythmia with them. 4,338,320, Cl. 424-259.000.

Rosenwinkel, Donald A.: *See—*
Breslow, Jeffrey D.; Rosenwinkel, Donald A.; Hanson, Steven P.; and Harper, Rex M., 4,337,948, Cl. 273-237.000.

Rossow, Harold E.: *See—*
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Rossville Yarn Processing Company: *See—*
Hutcheson, William F., 4,338,090, Cl. 8-478.000.

Rotaque (Proprietary) Limited: *See—*
Brouwer, Cornelis, 4,337,707, Cl. 105-250.000.

Roth, Eldon N. Apparatus for refrigerating protein materials. 4,337,627, Cl. 62-346.000.

Rothman, Steven H.: *See—*
Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., 4,338,663, Cl. 364-200.000.

Rottenfusser, Wolfgang: *See—*
Kohlpaintner, Georg; and Rottenfusser, Wolfgang, 4,337,974, Cl. 296-214.000.

Rouge, Jean, to Thomson-CSF. Battery activated by sea water. 4,338,384, Cl. 429-119.000.

Rowley, William N.: *See—*
Ehret, Gordon F.; Rowley, William N.; and Mullen, Richard E., 4,338,546, Cl. 315-119.000.

Roy, Rustum: *See—*
Shaffer, Peter T. B.; Roy, Rustum; and Macmillan, Norman H., 4,338,215, Cl. 252-628.000.

Royal Development Company, Inc.: *See—*
Rogers, Walter C., Jr.; and Hoffman, David S., 4,337,977, Cl. 297-85.000.

Rozmus, Walter J., to Kelsey-Hayes Company. Measuring and dispensing assembly. 4,337,880, Cl. 222-152.000.

Rubin, David, to Schwimmer, Adolf; Schwartz, Irwin Steven; and Rubin, David. Method for the treatment of tumors with β-glucuronidase activity dependent pharmaceuticals. 4,337,760, Cl. 128-1.00R.

Rummele, John E.: *See—*
Sampson, Gerald L.; and Rummele, John E., 4,337,751, Cl. 126-25.00R.

Rupprecht, Hans S.: *See—*
Cavaliere, Joseph R.; Horng, Cheng T.; Konian, Richard R.; Rupprecht, Hans S.; and Schwenker, Robert O., 4,338,138, Cl. 148-1.500.

Russell, Edward J.: *See—*
vander Griendt, Pieter S.; Tielrooy, Robert W.; and Russell, Edward J., 4,337,719, Cl. 118-46.000.

Russell, Raymond J., to Panelgraphic Corporation. Method of forming an abrasion-resistant coating on molded articles. 4,338,269, Cl. 264-22.000.

Russo, Robert V., to Mobil Oil Corporation. Boilable pouch for foods. 4,338,365, Cl. 428-35.000.

Rustad, Stanley C.: *See—*
Haub, John T.; Krassas, James G.; Rustad, Stanley C.; and Davis, Noel, 4,337,986, Cl. 308-177.000.

Rutter, Bernhard: *See—*
Franklin, James G.; and Rutter, Bernhard, 4,338,349, Cl. 426-631.000.

Ryder, Francis E.: *See—*
Thomas, Michael D.; and Ryder, Francis E., 4,337,858, Cl. 206-5.100.

Ryder International Corporation: *See—*
Thomas, Michael D.; and Ryder, Francis E., 4,337,858, Cl. 206-5.100.

Ryobi, Ltd.: *See—*
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S. A. Des Etablissements Francois Salomon & Fils: *See—*
Salomon, Georges P. J., 4,337,965, Cl. 280-628.000.

S. A. Martin: *See—*
Berthelot, Daniel; and Badin, Gerard, 4,338,154, Cl. 156-462.000.

S & C Electric Company: *See—*
Chabala, Leonard V.; and Hall, Walter J., 4,338,499, Cl. 200-50.00C.

SAB Industri AB: *See—*
Severinsson, Lars M., 4,337,690, Cl. 92-129.000.

Sadoune, Joseph; and Laroche, Pierre, to BFG Glassgroup. Energy reflector and method of making. 4,337,997, Cl. 350-310.000.

Sagisaka, Kiyoji: *See—*
Sato, Shiro; and Sagisaka, Kiyoji, 4,337,785, Cl. 137-1.000.
Sato, Shiro; and Sagisaka, Kiyoji, 4,337,793, Cl. 137-561.00R.

Saito, Atsunori, to Nippondenso Co., Ltd. Air conditioner system for automobiles. 4,337,821, Cl. 165-12.000.

Saito, Hiroyasu: *See—*
Unuma, Kunio; Saito, Hiroyasu; Inomata, Jihei; and Takizawa, Saburo, 4,338,461, Cl. 562-507.000.

Saito, Hisao: *See—*
Koinuma, Tokuju; Saito, Hisao; and Miura, Heihachi, 4,338,545, Cl. 315-39.710.

Saito, Isoo; and Fujioka, Kotaro, to Toray Industries, Inc. Process for producing high knot strength polyamide monofilaments. 4,338,277, Cl. 264-235.600.

Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, to Toray Industries, Inc.; and

Bridgestone Tire Company Limited. Golf ball. 4,337,946, Cl. 273-225.000.
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, to Bridgestone Tire Co., Ltd.; and Toray Industries, Inc. Golf ball. 4,337,947, Cl. 273-235.00R.
Sakai, Kiyoshi; Hashimoto, Mitsuru; and Kawakami, Tomiko, to Ricoh Company, Limited. Electrophotographic element with a phenyhydrazone charge transport layer. 4,338,388, Cl. 430-59.000.
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, to Babcock Hitachi Kabushiki Kaisha. Fluidized bed combustor. 4,338,283, Cl. 422-112.000.
Sakane, Kazuo: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,338,313, Cl. 424-246.000.
Sakurada, Masahiko: *See*—
Orimo, Ryoichi; Sakurada, Masahiko; Banno, Taiichi; Manabe, Sugio; and Galle, Kevin, 4,338,279, Cl. 422-64.000.
Salomon, Georges P. J., to S. A. Des Etablissements Francois Salomon & Fils. Safety binding adapted to be mounted on a ski. 4,337,965, Cl. 280-628.000.
Sampson, Gerald L.; and Rummele, John E. Barbecue grill accessory. 4,337,751, Cl. 126-25.00R.
Sand, Robert H.; and Trachtenburg, Martin. Glazing strip applicator tool. 4,338,156, Cl. 156-574.000.
Sanders, Terrence L.: *See*—
Savolskis, Edward P.; and Sanders, Terrence L., 4,338,117, Cl. 65-158.000.
Sanderson, John R.; Binsack, Rudolf; Fahnler, Friedrich; and Lindner, Christian, to Bayer Aktiengesellschaft. High-impact polyamide moulding compositions. 4,338,406, Cl. 525-66.000.
Sandoz Ltd.: *See*—
Hinsken, Hans; Mayerhoefer, Horst; Mueller, Wolfgang; and Schneider, Hermann, 4,338,244, Cl. 524-109.000.
Schneider, Lukas, 4,338,092, Cl. 8-549.000.
Sane, Jayant N.: *See*—
Highley, Derek R.; and Sane, Jayant N., 4,338,295, Cl. 424-71.000.
San Jose-Alcalde, Juan L., to Hylsa, S.A. Method and apparatus for the reduction of metal ores. 4,338,123, Cl. 75-34.000.
Santoro, Giovanni. Tape tensioning device for tape recorders of the cassette type. 4,337,910, Cl. 242-204.000.
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Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., 4,338,460, Cl. 562-448.000.
Scanlon, William F., to Heinemann Electric Company. Circuit protector having a slidable latch. 4,338,586, Cl. 337-74.000.
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Schellenberg, Rudolf, to Schweizerische Lokomotiv und Maschinenfabrik. Resiliently interconnected pivoted trucks. 4,337,705, Cl. 105-168.000.
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Schlosser, Hermann; Zelder, Felix; Riedel, Rudolf; and Borberg, Klaus, to Seitz-Werke GmbH. Method and apparatus for cleaning bottle filling devices after bottle breakage. 4,337,608, Cl. 53-471.000.
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Coates, George R., 4,338,567, Cl. 324-338.000.
Escaron, Pierre C.; and Hoppe, Joachim A., 4,337,969, Cl. 285-24.000.
Mayer, Claude, 4,338,664, Cl. 364-422.000.
Schmanski, Donald W. Glarefoil assembly. 4,338,041, Cl. 404-9.000.
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Schmidt, Michael D.: *See*—
Sifri, Elie C.; and Schmidt, Michael D., 4,337,692, Cl. 92-168.000.
Schmidt, Robert R.: *See*—
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Voelker, Wolfgang; Schmitt, Alfons; and Radeck, Fritz, 4,337,725, Cl. 118-665.000.
Schnedecker, Guy, to Commissariat a l'Energie Atomique. Process for the production of alveolar modules. 4,338,273, Cl. 264-167.000.
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Streiff, Mathias; and Schnyder, Peter, 4,337,922, Cl. 254-134.3FT.
Schoner, Hartmut, to Diehl GmbH & Company. Process and arrangement for guiding the effect of underwater detonations of underwater explosive bodies. 4,337,703, Cl. 102-406.000.
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Konig, Klaus; Reichmann, Wolfgang; and Schonfelder, Manfred, 4,338,431, Cl. 528-272.000.
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Mucke, Klaus, 4,338,486, Cl. 174-52.00H.
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Schultz, Robert S. Method for making a collapsible dispensing tube having an anchored barrier member. 4,338,278, Cl. 264-261.000.
Schulz, Lothar: *See*—
Habig, Kurt; Baessler, Konrad; Schulz, Lothar; and Schutte, Heinz, 4,338,473, Cl. 568-933.000.
Schumacher, Peter L.: *See*—
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Schundehutte, Karl H.: *See*—
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Habig, Kurt; Baessler, Konrad; Schulz, Lothar; and Schutte, Heinz, 4,338,473, Cl. 568-933.000.
Schwartz, Irwin Steven: *See*—
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Schwedock, Jeffrey P.: *See*—
Reif, Henry E.; and Schwedock, Jeffrey P., 4,338,186, Cl. 208-89.000.

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Brown, Robert S.; Schwickert, Russell C.; and Demas, Nickolas, 4,337,645, Cl. 73-52.000.

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Regnier, Gilbert; Dhainaut, Alain; and Duhault, Jacques, 4,338,323, Cl. 424-266.000.

Scott, Waller M., Jr. Control system for a motor actuated door operating mechanism. 4,338,553, Cl. 318-266.000.

Scott, William B., to W. A. Whitney Corp. Water-quenched collection system for use with a plasma-arc torch. 4,338,507, Cl. 219-121.0PC.

Scotte, Pierre: *See*—
Goullet, Pierre; and Scotte, Pierre, 4,338,136, Cl. 106-273.00N.

Seaberg, David H., to J. I. Case Company. Bulldozer linkage. 4,337,836, Cl. 172-826.000.

Seals, Emery L. Measuring device. 4,337,578, Cl. 33-125.00R.

Seeger, Karl; Jundt, Werner; Mezger, Manfred; Kiencke, Uwe; Wesemeyer, Jurgen; Haubner, Georg; and Meier, Werner, to Robert Bosch GmbH. Ignition system for internal combustion engines. 4,337,744, Cl. 123-416.000.

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Lane, Ernest, Jr.; and Seekins, Raymond E., 4,337,621, Cl. 60-527.000.

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Seger, Fritz O., to Smith International Inc. High pressure valve. 4,337,788, Cl. 137-315.000.

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Miyake, Masayuki; Sekino, Takeo; Takeda, Masashi; and Baba, Yasuharu, 4,338,619, Cl. 357-46.000.

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Sellen, Kenneth R.; Neill, Jimmie; Banka, Eugene F.; and Barz, William, to Burroughs Corporation. Modular-head endorser. 4,338,610, Cl. 346-75.000.

Selleroni, Marco P.: *See*—
Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., 4,337,829, Cl. 166-366.000.

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Senba, Eiiji: *See*—
Terashima, Isamu; Uchida, Shigeru; and Senba, Eiiji, 4,338,019, Cl. 355-14.00D.

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Pressman, Gerald L.; Moore, Robert A.; Brooks, Jeffrey B.; and Sengstaken, Robert W., Jr., 4,338,614, Cl. 346-155.000.

Senzaki, Takashi; Murakami, Ryoichi; Yasuhara, Kiyotada; and Takahashi, Masashi. Formation of zinc phosphate coating on metallic surface. 4,338,141, Cl. 148-6.15Z.

Serapioni, Sergio. Panel for collecting solar energy with reduced losses. 4,337,756, Cl. 126-432.000.

Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Freitag, Dieter, to Bayer Aktiengesellschaft. Process for working up polycarbonates. 4,338,429, Cl. 528-196.000.

Severinsson, Lars M., to SAB Industri AB. Fluid pressure actuated brake unit. 4,337,690, Cl. 92-129.000.

Sevrence, Warren E., to Acco Industries Inc. Stamped yoke end and method of making same. 4,337,554, Cl. 24-115.00R.

Shaffer, Peter T. B.; Roy, Rustum; and Macmillan, Norman H., to Kennecott Corporation. Conversion of radioactive wastes to stable form for disposal. 4,338,215, Cl. 252-628.000.

Shaffer, Robert W., to Ingersoll-Rand Company. Lubrication means for a journal and bearing. 4,337,984, Cl. 308-103.000.

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Efimov, Vyacheslav T.; Nazarian, Miron M.; Axenko, Alexandr A.; Kolyada, Vladimir A.; Maskaev, Anatoly X.; Shamsha, Ljudmila F.; and Kostjuk, Vladimir I., 4,338,178, Cl. 204-275.000.

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Sharp Corporation: *See*—
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Hashimoto, Shintaro; Komaki, Shigeki; and Tanimoto, Akira, 4,338,502, Cl. 200-159.00B.
Masuzawa, Sigeaki; Miyazaki, Hiroshi; and Shibata, Shinya, 4,338,490, Cl. 179-1.0SM.
Ohba, Toshihiro; Yasuda, Shuhei; and Kanatani, Yoshiharu, 4,338,598, Cl. 340-713.000.

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Baxter, Robert; and Leach, Ronald W. A., 4,338,121, Cl. 71-118.000.
Schaper, Lambert; and Sie, Swan T., 4,338,089, Cl. 518-707.000.
Titus, Paul E., 4,338,044, Cl. 405-172.000.

Shenton, Francis L., to Upjohn Company, The. Use of alkylformamide and acetamide in preparing α-acetyl-α'-methylsuccinate ester. 4,338,459, Cl. 560-176.000.

Shephard, Margaret C.: *See*—
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Sheppard, Clyde H., to Boeing Company, The. High performance resin reaction products of carboxyl terminated 1,2-polybutadiene with epoxides and acid terminated difunctional aliphatic alcohols. 4,338,225, Cl. 525-122.000.

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Sher, Frank T.: *See*—
Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., 4,338,377, Cl. 428-428.000.

Sherex Chemical Company, Inc.: *See*—
Earl, Gary W.; and Hickman, Howard M., 4,338,216, Cl. 252-311.000.

Sherman, Michael I.: *See*—
Richter, Johan C. F. C.; and Sherman, Michael I., 4,338,049, Cl. 406-63.000.

Shetterly, Donivan M.: *See*—
Huff, Norman T.; Shetterly, Donivan M.; and Kalisher, Lawrence I., 4,338,116, Cl. 65-29.000.

Shibata, Koichi: *See*—
Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, 4,338,256, Cl. 260-453.00A.

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Weil, Thomas A.; Dzadzic, Peter M.; Shih, Chien-Cheng J.; and Price, Michael C., 4,338,399, Cl. 435-99.000.

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Egami, Tetsufumi, 4,337,933, Cl. 269-40.000.

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Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, 4,337,651, Cl. 73-129.000.

Shimizu, Tadayoshi: *See*—
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Shore, Sheldon G.; Toft, Mark A.; and Himpsl, Francis L., to United States of America, Army. Preparation of decaborane (14) through hydride ion abstraction reactions. 4,338,289, Cl. 423-294.000.

Shupe, James T. Wall protective heating system. 4,337,894, Cl. 237-46.000.

Sico Incorporated: *See*—
Carlson, Ronald R., 4,337,670, Cl. 74-96.000.

Sidlinger, Bruce C.; Sidlinger, Joanne; and Sidlinger, Bruce D. Portable exercising device usable alone or with other devices for multiple routines. 4,337,942, Cl. 272-144.000.

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Sidlinger, Bruce C.; Sidlinger, Joanne; and Sidlinger, Bruce D., 4,337,942, Cl. 272-144.000.
Sie, Swan T.: *See*—
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Eckert, Joachim; and Spirk, Franz, 4,338,537, Cl. 310-214.000.
Grafenschnell, Horst, 4,338,533, Cl. 310-154.000.
Herbst, Heiner; and Pfleiderer, Hans-Jorg, 4,338,515, Cl. 250-214.00R.
Littwin, Burkhard, 4,338,539, Cl. 313-217.000.
Stenhuis, Derk; and Nieuwenhuizen, Wouter J., 4,338,493, Cl. 179-5.00R.
Treitinger, Ludwig; Tischer, Peter; and Schneider-Gmelch, Brigitte, 4,338,281, Cl. 422-98.000.
Sifri, Elie C.; and Schmidt, Michael D., to Cascade Corporation. Fluid cylinder assembly having minimized outside diameter. 4,337,692, Cl. 92-168.000.
Sigma Corporation: *See*—
Kanda, Kunihiko, 4,338,157, Cl. 156-627.000.
Silverman, Harold: *See*—
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Simpson, James E.: *See*—
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Sims, Dewey M., Jr., to Northern Telecom Systems Corporation. Cartridge-loading apparatus for tape recorder drives. 4,337,908, Cl. 242-198.000.
Singer Company, The: *See*—
Brienza, Michael J.; and Warner, Richard C., 4,338,518, Cl. 250-237.00G.
Singh, Anand P.; and Shichman, Daniel, to NRM Corporation. Tire press. 4,338,069, Cl. 425-38.000.
Siorek, Richard W.; and Theuerkauf, James P., to United States of America, Army. Energy management damper. 4,337,849, Cl. 188-276.000.
Sirkar, Amalesh K., to Hydrocarbon Research, Inc. Catalytic hydrogenolysis of alditols to produce polyols. 4,338,472, Cl. 568-861.000.
Six, Jean-Claude G., to U.S. Philips Corporation. Electronic thermostat equipped with an energy-saving device. 4,338,511, Cl. 219-497.000.
Six, Jean-Claude G.; and Kaire, Jean-Claude, to U.S. Philips Corporation. Low-pass filter for low-frequency signals. 4,338,530, Cl. 307-520.000.
Skarvada, Thomas, to Crane Co. Modulator for anti-skid braking system. 4,338,669, Cl. 364-426.000.
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Skingle, Thomas J.: *See*—
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Skinner, Mark: *See*—
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Skow, Lynn R., to Gemini Systems, Inc. Hot water probe. 4,337,730, Cl. 122-20.00A.
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Small, LaVerne D.: *See*—
Rosenberg, Harry; and Small, LaVerne D., 4,338,320, Cl. 424-259.000.
Smart, Calvin R. Bingo card box. 4,337,861, Cl. 206-579.000.
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Smith International Inc.: *See*—
Seger, Fritz O., 4,337,788, Cl. 137-315.000.
Smith, Jackson A. Fibre optical cable pulling eye. 4,337,923, Cl. 254-134.3FT.
Smith, Stephen E., to Airco, Inc. Methods for controlling vapor concentrations in an atmosphere. 4,337,582, Cl. 34-27.000.
Smith, Trevor S., to Lucas Industries Limited. Fuel control system for a gas turbine engine. 4,337,617, Cl. 60-39.28R.
Smith, Wesley F.: *See*—
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Gillet, Claude L.; Roba, Joseph L.; Snyers, Michel; Van Dorsser, William R.; and Lambelin, Georges E., 4,338,330, Cl. 424-273.00B.
Sobel, Johannes: *See*—
Himmelmann, Wolfgang; Bergthaller, Peter; and Sobel, Johannes, 4,338,394, Cl. 430-621.000.
Societe a Responsabilite Limitee: Societe de Developpement Pour l'Agriculture Sodelvage: *See*—
Foenard, Pierre, 4,338,369, Cl. 428-235.000.
Societe Anonyme de Telecommunications: *See*—
Hamon, Christian H., 4,337,624, Cl. 62-45.000.
Societe Anonyme d'Etudes de Recherches et de Productions d'Agents Chimiques ERPAC: *See*—
Treyssac, Georges, 4,338,195, Cl. 210-519.000.
Societe Anonyme dite: Delle-Alsthom: *See*—
Pham Van, Doan; and Nicoloso, Dante, 4,338,500, Cl. 200-144.0AP.
Societe Chimique des Charbonnages: *See*—
Debayeux, Christian; Lacroix, Hubert; and Sternicha, Felix, 4,337,722, Cl. 118-303.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Franklin, James G.; and Rutter, Bernhard, 4,338,349, Cl. 426-631.000.
Societe d'Exploitation de Brevets J.B.: *See*—
Hancou, Theodore, 4,337,547, Cl. 15-250.420.
Societe Generale pour l'Emballage: *See*—
Tailleur, Andre; and O'Connor, Brendan F., 4,338,028, Cl. 356-240.000.
Solid Photography, Inc.: *See*—
DiMatteo, Paul; Segnini, Robert; and Rademacher, Paul, 4,337,566, Cl. 29-558.000.
Solomon, Frank, to Diamond Shamrock Corporation. Electrode containing extraction treated particles. 4,338,181, Cl. 204-294.000.
Sone, Yoshiaki: *See*—
Sawada, Takamasa; Sone, Yoshiaki; and Tanaka, Kanou, 4,337,935, Cl. 271-9.000.
Sono-Tek Corporation: *See*—
Berger, Harvey L.; and Brandow, Charles R., 4,337,896, Cl. 239-102.000.
Sony Corporation: *See*—
Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, 4,338,683, Cl. 369-50.000.
Hamada, Osamu, 4,338,674, Cl. 364-718.000.
Miyake, Masayuki; Sekino, Takeo; Takeda, Masashi; and Baba, Yasuharu, 4,338,619, Cl. 357-46.000.
Tada, Masahiro; Ishigaki, Yoshio; Ouchi, Koji; and Nakamichi, Koya, 4,338,606, Cl. 343-744.000.
Yamanaka, Seisuke, 4,338,625, Cl. 358-29.000.
Soong, Tsai C. Javelin. 4,337,940, Cl. 272-106.000.
Soto, Joseph: *See*—
Asmus, Jean-Pierre; Soto, Joseph; and Op Het Veld, Sebastianus J., 4,338,623, Cl. 358-22.000.
Sound Control, Inc.: *See*—
Mills, Thomas, 4,338,593, Cl. 340-384.00E.
Sovilla, Heinz. Incandescent lamp. 4,338,540, Cl. 313-220.000.
Spadini, Gianfranco L.; Crisp, Peter N.; and McRitchie, Allan C., to Procter & Gamble Company, The. Detergent softener containing anionic, amine, and water soluble cationic. 4,338,204, Cl. 252-8.750.
Spain, Stanley R., to Kidde, Inc. Curane boom pivot structure. 4,337,867, Cl. 212-181.000.
Spangler, Ray P.; and Spector, George. Vehicle powered by air pressure engine. 4,337,842, Cl. 180-302.000.
Spaulding, Richard A.: *See*—
Dillon, Peter L. P.; Edwards, Evan A.; and Spaulding, Richard A., 4,338,634, Cl. 358-214.000.
Spector, George: *See*—
Spangler, Ray P.; and Spector, George, 4,337,842, Cl. 180-302.000.
Tesack, Gerald; and Spector, George, 4,337,917, Cl. 251-90.000.
Spencer Wright Industries, Inc.: *See*—
Bardsley, Harold B.; Lear, Edward C.; and Jones, J. Robert, 4,338,032, Cl. 356-431.000.
Spensley, Robert H.: *See*—
Murphy, John M.; and Spensley, Robert H., 4,338,048, Cl. 405-261.000.
Speranza, George P.: *See*—
Brennan, Michael E.; and Speranza, George P., 4,338,443, Cl. 544-401.000.
Sperry Corporation: *See*—
Roeder, Robert S.; Day, W. Baldwin; Hunt, Harold W.; and Wilt, Robert E., 4,338,602, Cl. 343-10.000.
Spevak, Richard P.; and Hansen, Lynn D., to Medtronic, Inc. Physiological event detector. 4,337,779, Cl. 128-691.000.
Spiewak, John W.: *See*—
Dougherty, David J.; Gunesin, Binnur; and Spiewak, John W., 4,338,425, Cl. 526-216.000.
Spin Physics, Inc.: *See*—
Bixby, James A., 4,338,514, Cl. 250-201.000.

Spinazzi, Angelo, to Rollwash Italiana S.p.A. Device for elimination of foam. 4,338,218, Cl. 252-361.000.

Spirk, Franz: *See—*
Eckert, Joachim; and Spirk, Franz, 4,338,537, Cl. 310-214.000.

Spohr, Reimar, to Gesellschaft fur Schwerionenforschung GmbH. Method for producing planar surfaces having very fine peaks in the micron range. 4,338,164, Cl. 204-4.000.

Staar S. A.: *See—*
Staar, Theophiel C. J. L., 4,338,644, Cl. 360-132.000.

Staar, Theophiel C. J. L., to Staar S. A. Magnetic tape cassettes provided with memory circuits for storing information. 4,338,644, Cl. 360-132.000.

Stagg, Karl. Apparatus for determining end-play in a torque converter. 4,337,649, Cl. 73-118.000.

Stahler, Alfred F. Apparatus for guiding tape. 4,337,885, Cl. 226-97.000.

Stal-Laval Turbin AB: *See—*
Johansson, Lars-Goran, 4,338,074, Cl. 431-6.000.

Standard Oil Company, The: *See—*
Shaw, Wilfrid G.; and Paparizos, Christos, 4,338,463, Cl. 562-599.000.

Standard Oil Company (Indiana): *See—*
Harper, Jon J.; and Zeitlin, Martin A., 4,338,464, Cl. 562-608.000.
Weil, Thomas A.; Dzadzic, Peter M.; Shih, Chien-Cheng J.; and Price, Michael C., 4,338,399, Cl. 435-99.000.

Standard Register Company, The: *See—*
Maierson, Theodore, 4,337,968, Cl. 282-27.500.

Stanley, Robert W.; Monette, Serge; and Kerfoot, Derek G. E., to Noranda Mines Limited. Hydrometallurgical treatment of copper-bearing hematite residue. 4,338,168, Cl. 204-108.000.

Stanovoi, Ivan V.: *See—*
Krylov, Gleb L.; Stanovoi, Ivan V.; and Fuga, Georgy P., 4,337,679, Cl. 83-385.000.

Stapleton, John J., to International Telephone and Telegraph Corporation. LED/CCD Multiplexer and infrared image converter. 4,338,627, Cl. 358-113.000.

State of Victoria, The: *See—*
Garwoli, Wolfgang N., 4,338,026, Cl. 356-73.000.

Staten, Gilbert S.: *See—*
Tao, Eddie V. P.; and Staten, Gilbert S., 4,338,449, Cl. 548-140.000.

Stauffer Chemical Company: *See—*
Kuck, Mark A.; and Miller, Gary K., 4,338,166, Cl. 204-59.00R.
Pallos, Ferenc M., 4,338,120, Cl. 71-98.000.
Via, Francis A., 4,338,172, Cl. 204-159.230.

Steer, Adrian M.: *See—*
Atkinson, Alan W.; and Steer, Adrian M., 4,337,863, Cl. 209-12.000.

Steilen, Ronald M., to Deere & Company. Scraper for double disk furrow opener. 4,337,835, Cl. 172-560.000.

Steiner, Gordon L.; O'Keefe, David B.; and Miller, Robert C., to Honeywell Information Systems Inc. Remote monitor interface. 4,338,597, Cl. 340-706.000.

Stenhuis, Derk; and Nieuwenhuizen, Wouter J., to Siemens Aktiengesellschaft. Method and devices for reporting emergency calls and for initiating emergency assistance measures. 4,338,493, Cl. 179-5.00R.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Dickinson, William B., 4,338,446, Cl. 546-314.000.
Thompson, Joseph, 4,337,876, Cl. 221-36.000.

Sterling Faucet Company: *See—*
Argyris, Pericles A.; and Williams, William R., 4,337,795, Cl. 137-625.170.

Sternicha, Felix: *See—*
Debayeux, Christian; Lacroix, Hubert; and Sternicha, Felix, 4,337,722, Cl. 118-303.000.

Stetter, Jorg; Ditgens, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. N-Diazolylalkyl-haloacetanilide compounds and herbicidal compositions. 4,338,119, Cl. 71-92.000.

Stevanovich, Srbo M.: *See—*
Garver, Richard F.; and Stevanovich, Srbo M., 4,338,051, Cl. 409-184.000.

Stevens, R. Barry: *See—*
Ambers, Paul J.; and Stevens, R. Barry, 4,338,280, Cl. 422-68.000.

Stevens, Roger D. Folding utility cart. 4,337,966, Cl. 280-645.000.

Stevenson, Richard B.: *See—*
Brooks, Arthur W.; Stevenson, Richard B.; and Bell, Leonard, 4,338,344, Cl. 426-461.000.

Stevenson, Richard L. Skateboard structure. 4,337,963, Cl. 280-87.04A.

Steward Plastics, Inc.: *See—*
Carlson, Lennart L.; and Hoiberg, Douglas I., 4,337,800, Cl. 138-122.000.

Stewart, Gilbert. Cue ball shooting guide. 4,337,943, Cl. 273-2.000.

Stewart, James M. Heat pipe manifold heat exchanger. 4,337,825, Cl. 165-104.210.

Stewart, John A.; and Nichols, Wayne C., to General Motors Corporation. Low tire pressure transducer. 4,337,718, Cl. 116-34.00R.

Stewart, Peter A. E., to Rolls Royce Limited. Method of and apparatus for analyzing gas flows inside hollow bodies. 4,338,520, Cl. 250-356.000.

Stewart, Robert M. Trolleys. 4,337,960, Cl. 280-47.37R.

Stievenart, Emile F.; Plessers, Hendrik S.; Hellemans, Julianus J.; and Neujens, Georges J., to Agfa-Gevaert N.V. Device for unloading radiographic cassettes in daylight. 4,338,522, Cl. 250-468.000.

Stiros, Paul, to Procter & Gamble Company, The. Liquid surfactant skin cleanser with lather boosters. 4,338,211, Cl. 252-142.000.

Stoker, Albert: *See—*
van den Bungelaar, Martinus J.; and Stoker, Albert, 4,338,573, Cl. 330-298.000.

Stone & Webster Engineering Corporation: *See—*
Gartside, Robert J.; and Woebcke, Herman N., 4,338,187, Cl. 208-127.000.

Storandt, Ralf: *See—*
Biermann, Peter; Storandt, Ralf; and Feucht, Rudi, 4,337,964, Cl. 280-605.000.

Strahm, Christian, to Lindauer Dornier Gesellschaft mbH. Externally held cylindrical expander for tubular wares. 4,337,630, Cl. 68-13.00R.

Strauch, Richard G.; and Hogg, David C., to United States of America, Commerce. Triple-beam offset paraboloidal antenna. 4,338,608, Cl. 343-779.000.

Straumann, Fritz; and Sutter, Franz. Oil burner for low heating capacities. 4,338,076, Cl. 431-351.000.

Strecker, Richard A., to United States of America, Army. Preparation of 1,5-methylene-3,7-dinitro-1,3,5,7-tetraazacyclooctane. 4,338,442, Cl. 544-215.000.

Strecker, William D.; Hastings, Thomas N.; Lary, Richard F.; Rodgers, David P.; and Rothman, Steven H., to Digital Equipment Corporation. Calling instructions for a data processing system. 4,338,663, Cl. 364-200.000.

Streiff, Mathias; and Schnyder, Peter, to Mathias Streiff AG. Apparatus for laying and securing heavy electrical cables. 4,337,922, Cl. 254-134.3FT.

Strickman, Melvyn B.: *See—*
Covert, William J.; and Strickman, Melvyn B., 4,337,961, Cl. 280-87.04A.

Stringer, William C.: *See—*
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,337,549, Cl. 17-1.00R.

Strobl, Heinrich: *See—*
Munding, German; Muller, Wolfgang; and Strobl, Heinrich, 4,337,685, Cl. 89-7.000.

Strolle, Clifford H.; and Thornley, Glenn D., to Du Pont de Nemours, E. I., and Company. High-solids thermosetting enamel coating composition. 4,338,379, Cl. 428-520.000.

Struckmeyer, Ernest F. Sliding window construction having pivotal characteristic to facilitate cleaning both sides of the window. 4,337,597, Cl. 49-256.000.

Strudel, Werner, to Lindauer Dornier Gesellschaft mbH. Externally held cylindrical expander for tubular wares. 4,337,634, Cl. 72-113.000.

Stuckey, James P.: *See—*
Myers, Richard G.; and Stuckey, James P., 4,337,786, Cl. 137-3.000.

Studt, William L.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,338,441, Cl. 544-211.000.

Subbarao, Thallam, to General Electric Company. Gapless discharge counter for lightning arresters. 4,338,648, Cl. 361-127.000.

Sublett, Bobby J.: *See—*
Zannucci, Joseph S.; and Sublett, Bobby J., 4,338,247, Cl. 528-307.000.

Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, to Nissan Motor Company, Limited. Internal combustion engine. 4,337,740, Cl. 123-198.00F.

Sugerman, Gerald; and Monte, Salvatore J., to Kenrich Petrochemicals, Inc. Pyrophosphato titanate adducts. 4,338,220, Cl. 252-430.000.

Sugihara, Kunihiko; Yoneda, Kenji; and Muranaka, Shigeo, to Nissan Motor Co., Ltd. Device for detecting engine knock. 4,337,641, Cl. 73-35.000.

Sugihara, Kunihiko: *See—*
Muranaka, Shigeo; Onoda, Michio; and Sugihara, Kunihiko, 4,337,640, Cl. 73-35.000.

Sugimoto, Isao: *See—*
Fukuroi, Akio; and Sugimoto, Isao, 4,337,631, Cl. 68-189.000.

Sugita, Yutaka: *See—*
Ohta, Norio; Ishida, Fumihiko; Ikeda, Tadashi; Ando, Keikichi; and Sugita, Yutaka, 4,338,372, Cl. 428-336.000.

Suh, Nam P.; and Rinderle, James R., to Massachusetts Institute of Technology. Injection molding device and method. 4,338,068, Cl. 425-144.000.

Sukhman, Yefim. Multicolor pulsed coherent-light source. 4,338,578, Cl. 372-23.000.

Suling, Robert C.; Tomlinson, Charles W.; and Fields, Winfred G., to Acme Visible Records, Inc. Mail sorting apparatus and system. 4,337,866, Cl. 209-656.000.

Sullivan, John; and Lillibridge, Harold R., to Champion International Corporation. Apparatus for manufacturing envelopes. 4,338,085, Cl. 493-254.000.

Sulzbach, Reinhard A.; and Hartwimmer, Robert, to Hoechst Aktiengesellschaft. Process for the preparation of aqueous, colloidal dispersions of copolymers of the tetrafluoroethylene/ethylene type. 4,338,237, Cl. 524-777.000.

Sulzer Brothers Limited: *See—*
Heusler, Samuel, 4,337,689, Cl. 91-438.000.

Sumitomo Chemical Company, Limited: *See—*
Maruyama, Takashi; and Ueno, Katsuji, 4,338,421, Cl. 525-397.000.
Okamoto, Hideho; and Nishio, Ken-ichi, 4,338,132, Cl. 75-208.00R.
Takano, Tetsuo; Suzukamo, Gohu; Ishino, Masaru; and Ikimi, Kiyoshi, 4,338,467, Cl. 568-428.000.
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, 4,338,255, Cl. 260-448.0AD.
Ueno, Katsuji; and Maruyama, Takashi, 4,338,410, Cl. 525-132.000.

Sumitomo Electric Industries, Ltd.: *See*—
Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.
Sumitomo Light Metal Industries, Ltd.: *See*—
Sato, Shiro; and Sagisaka, Kiyoji, 4,337,785, Cl. 137-1.000.
Sato, Shiro; and Sagisaka, Kiyoji, 4,337,793, Cl. 137-561.00R.
Sumitomo Metal Mining Company, Ltd.: *See*—
Ohya, Yoichi; and Shimizu, Tadayoshi, 4,338,385, Cl. 429-206.000.
Sun Gas Company: *See*—
Zupanick, Joseph E., 4,337,668, Cl. 73-861.610.
Sundstrand Corporation: *See*—
Harja, Arne M., 4,337,909, Cl. 242-199.000.
Sundstrom, Inge B.; and Cairenius, Per R. W. Valve provided with a measuring instrument and intended for a moving medium. 4,337,655, Cl. 73-193.00R.
Suntech, Inc.: *See*—
Lyons, James E.; and Hosler, Peter, 4,338,469, Cl. 568-666.000.
Reif, Henry E.; and Schwedock, Jeffrey P., 4,338,186, Cl. 208-89.000.
Suppelsa, Anthony B.: *See*—
Geller, Gary R.; Suppelsa, Anthony B.; and Martin, William J., 4,338,506, Cl. 219-121.0LJ.
Suter, Andrew K., to Wiggins Teape Group Limited, The. Flexible vertical form, fill, seal packaging material and method of using. 4,337,862, Cl. 206-632.000.
Suter, Charles A., to Goodyear Aerospace Corporation. Chemically resistant coated fabric. 4,338,370, Cl. 428-250.000.
Sutter, Franz: *See*—
Straumann, Fritz; and Sutter, Franz, 4,338,076, Cl. 431-351.000.
Suzukamo, Gohu: *See*—
Takano, Tetsuo; Suzukamo, Gohu; Ishino, Masaru; and Ikimi, Kiyoshi, 4,338,467, Cl. 568-428.000.
Suzuki, Hajime; Umemura, Yoshifumi; and Ueda, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Device for shedding warp yarns in a weaving loom. 4,337,801, Cl. 139-57.000.
Suzuki, Hideo: *See*—
Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, 4,338,170, Cl. 204-158.00R.
Suzuki, Hiroshi: *See*—
Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.
Suzuki, Kiyoshi; and Okano, Kazumi, to Canon Kabushiki Kaisha. CdS-Binder member for electrophotography with Fe, Co, Ni additives. 4,338,389, Cl. 430-94.000.
Suzuki, Mitsuyuki: *See*—
Yamanaka, Minoru; Haneda, Hideo; Kato, Masatoshi; and Suzuki, Mitsuyuki, 4,337,794, Cl. 137-596.170.
Suzuki, Syunsuke: *See*—
Komatsu, Mikiya; Arita, Masashi; and Suzuki, Syunsuke, 4,337,817, Cl. 164-120.000.
Suzuki, Tadashi; and Kishi, Norimasa, to Nissan Motor Co., Ltd. Speed change control device for automatic transmission. 4,338,666, Cl. 364-424.100.
Suzuki, Takashi: *See*—
Matsumura, Susumu; Suzuki, Takashi; Matsumoto, Kazuya; and Momiyama, Kikuo, 4,338,012, Cl. 354-200.000.
Suzuki, Teruaki, to Kabushikikaisha Seisan Nipponsha Hamamatsu-Ko. Artificial insemination instrument for livestock. 4,338,402, Cl. 435-287.000.
Suzuki, Yasuo: *See*—
Koide, Tsuyoshi; and Suzuki, Yasuo, 4,337,599, Cl. 51-289.00R.
Swaby, Harold, to British Steel Corporation. Bundling of metal stock. 4,338,060, Cl. 414-748.000.
Swallow, Brian R., to Union Carbide Corporation. Wash system gas separation. 4,338,107, Cl. 62-17.000.
Swanson, William C.: *See*—
Bettin, Leonard A.; and Swanson, William C., 4,337,959, Cl. 280-43.230.
Swiss Aluminium Ltd.: *See*—
Bornand, Jean D., 4,338,124, Cl. 75-68.00R.
Symes, Kenneth C.: *See*—
Lawson, Christopher J.; and Symes, Kenneth C., 4,338,432, Cl. 536-123.000.
Syntex (U.S.A.) Inc.: *See*—
Korb, Donald R.; and Gallop, Paul M., 4,338,419, Cl. 525-350.000.
Szabo, Josef: *See*—
Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, 4,338,509, Cl. 219-121.0PR.
T and N Materials Research Limited: *See*—
Atkinson, Alan W.; and Steer, Adrian M., 4,337,863, Cl. 209-12.000.
Tada, Masahiro; Ishigaki, Yoshio; Ouchi, Koji; and Nakamichi, Koya, to Sony Corporation. Antenna system with variable directivity. 4,338,606, Cl. 343-744.000.
Tada, Satomi: *See*—
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.
Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Magnetic recording disc and method of making same. 4,338,643, Cl. 360-135.000.
Tagashira, Yoshimi: *See*—
Fujita, Toshio; Matsumoto, Youichi; and Tagashira, Yoshimi, 4,338,574, Cl. 331-1.00A.
Tailleur, Andre; and O'Connor, Brendan F., to Udaras Na Gaeltachta; and Societe Generale pour l'Emballage. Apparatus for inspecting translucent articles for faults. 4,338,028, Cl. 356-240.000.
Taisei Kohki Co., Ltd.: *See*—
Yasujima, Nobuo; Itokawa, Natsuo; and Kobayashi, Seiichiro, 4,338,145, Cl. 148-133.000.
Taiyo Seisakusho Manufacturing Co. Ltd.: *See*—
Iwase, Shigeo, 4,337,552, Cl. 17-71.000.
Takada, Shinzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic flowmeter. 4,337,667, Cl. 73-861.280.
Takagi, Izumi: *See*—
Witt, Jerry A.; and Takagi, Izumi, 4,337,958, Cl. 280-16.000.
Takahara, Yoshimasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for manufacture of assembled cam shaft. 4,337,572, Cl. 29-792.000.
Takahashi, Masashi: *See*—
Senzaki, Takashi; Murakami, Ryoichi; Yasuhara, Kiyotada; and Takahashi, Masashi, 4,338,141, Cl. 148-6.15Z.
Takahashi, Minoru; and Mitsui, Sadao, to TDK Electronics Co., Ltd. Ultrasonic atomizer unit utilizing shielded and grounded elements. 4,338,576, Cl. 331-67.000.
Takahashi, Norimichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focusing screen mounting device. 4,338,010, Cl. 354-152.000.
Takahasi, Hideki: *See*—
Kazaoka, Kenichi; Hirao, Koji; and Takahasi, Hideki, 4,337,978, Cl. 297-367.000.
Takamoto, Shigehito: *See*—
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.
Takanashi, Yukio; Nakayama, Shouji; and Higuchi, Toshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Directly heated cathode assembly. 4,338,542, Cl. 313-446.000.
Takano, Tetsuo; Suzukamo, Gohu; Ishino, Masaru; and Ikimi, Kiyoshi, to Sumitomo Chemical Company, Limited. Process for preparing arylacetaldehydes. 4,338,467, Cl. 568-428.000.
Takao, Hiroshi: *See*—
Akimune, Yoshio; Ambe, Satoshi; Takao, Hiroshi; and Kimura, Shinji, 4,338,356, Cl. 427-123.000.
Takase, Sadao: *See*—
Aono, Shigeo; and Takase, Sadao, 4,338,665, Cl. 364-424.000.
Takeda Chemical Industries, Ltd.: *See*—
Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, 4,338,256, Cl. 260-453.00A.
Takeda, Junichi: *See*—
Tanaka, Yasuyuki; Takeda, Junichi; and Noguchi, Kohji, 4,338,404, Cl. 521-52.000.
Takeda, Masashi: *See*—
Miyake, Masayuki; Sekino, Takeo; Takeda, Masashi; and Baba, Yasuharu, 4,338,619, Cl. 357-46.000.
Takenaka, Hiroyuki: *See*—
Hirakawa, Tadashi; Sasashige, Hiroaki; Takenaka, Hiroyuki; and Katayama, Keiichi, 4,337,884, Cl. 226-52.000.
Takeyasu, Michitomo: *See*—
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.
Takizawa, Saburo: *See*—
Unuma, Kunio; Saito, Hiroyasu; Inomata, Jihei; and Takizawa, Saburo, 4,338,461, Cl. 562-507.000.
Talmadge, Karen: *See*—
Gilbert, Walter; and Talmadge, Karen, 4,338,397, Cl. 435-68.000.
Talon, Inc.: *See*—
Moertel, George B., 4,337,889, Cl. 229-62.000.
Talres Development (N.A.) N.V.: *See*—
Lawson, Christopher J.; and Symes, Kenneth C., 4,338,432, Cl. 536-123.000.
Tamamushi, Masahiro; and Tuchiya, Yoshimasa, to Nissan Motor Company, Limited. Sunshine roof structure of vehicle. 4,337,975, Cl. 296-215.000.
Tamura, Paul S., to McNeilab, Inc. Electrochemical sensor with temperature compensation means. 4,338,174, Cl. 204-195.00P.
Tan, Hong S.; and Smink, Dirk A., to Gist-Brocades N.V. Sucrose ester treatment of bananas. 4,338,342, Cl. 426-308.000.
Tanaka, Chiaki: *See*—
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.
Tanaka, Gotaro: *See*—
Edahiro, Takao; Kyoto, Michihisa; Tanaka, Gotaro; and Kuwahara, Toru, 4,338,111, Cl. 65-18.200.
Tanaka, Kanou: *See*—
Sawada, Takamasa; Sone, Yoshiaki; and Tanaka, Kanou, 4,337,935, Cl. 271-9.000.
Tanaka, Kazuo: *See*—
Okuda, Naoki; and Tanaka, Kazuo, 4,338,142, Cl. 148-26.000.
Tanaka, Shinsaku; and Watanabe, Takashi, to Tanashin Denki Co., Ltd. Manual operation device. 4,337,676, Cl. 74-483.0PB.
Tanaka, Shoichi: *See*—
Nakai, Eiichiro; Kojima, Hiroshi; Tanaka, Shoichi; Kai, Toshiyuki; and Hasegawa, Shinichi, 4,338,286, Cl. 423-12.000.
Tanaka, Toshiaki: *See*—
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,337,740, Cl. 123-198.00F.

Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Switch for optical transmission lines. 4,337,995, Cl. 350-96.200.

Tanaka, Yasuyuki; Takeda, Junichi; and Noguchi, Kohji, to Asahi Kasei Kogyo Kabushiki Kaisha. Gel permeation chromatographic packing and process for producing same utilizing suspension polymerization. 4,338,404, Cl. 521-52.000.

Tanashin Denki Co., Ltd.: *See*—
Tanaka, Shinsaku; and Watanabe, Takashi, 4,337,676, Cl. 74-483.0PB.

Tancredi, Henry J.: *See*—
Del Bianco, Matthew A.; and Tancredi, Henry J., 4,338,152, Cl. 156-351.000.

Tandy Corporation: *See*—
Leininger, Steven, 4,338,599, Cl. 340-721.000.

Tang, Denny D.: *See*—
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.

Tanifuji, Shinya: *See*—
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.

Tanimoto, Akira: *See*—
Hashimoto, Shintaro; Komaki, Shigeki; and Tanimoto, Akira, 4,338,502, Cl. 200-159.00B.

Tanno, Norihiko: *See*—
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, 4,338,255, Cl. 260-448.0AD.

Tanno, Takashi; and Koike, Shigemitsu, to Toyo Kogyo Co., Ltd. Method for inspecting gear contact patterns. 4,337,580, Cl. 33-179.50R.

Tanno, Takashi: *See*—
Yamada, Akira; Tanno, Takashi; Wehle, Dieter; and Kaneko, Masao, 4,338,291, Cl. 423-648.00R.

Tanno, Yoshikazu: *See*—
Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.

Tanny, Gerald, to Yeda Research & Development Company Ltd. Method of producing solute-rejecting dynamic membrane filters and filters including such membranes. 4,338,194, Cl. 210-490.000.

Tao, Eddie V. P.; and Staten, Gilbert S., to Eli Lilly and Company. Herbicidal thiadiazolines. 4,338,449, Cl. 548-140.000.

Taplin, Lael B., to Bendix Corporation, The. Means for improving automobile driveability. 4,337,839, Cl. 180-179.000.

Taylor, Earl. Animal control halter. 4,337,610, Cl. 54-24.000.

TDK Electronics Co., Ltd.: *See*—
Chihara, Masao; Araki, Shigeo; and Asakawa, Kazuhiko, 4,338,510, Cl. 219-288.000.
Kawakami, Yoshio; Matsuzawa, Yoneo; and Kajimoto, Norifumi, 4,338,367, Cl. 428-141.000.
Takahashi, Minoru; and Mitsui, Sadao, 4,338,576, Cl. 331-67.000.

Teass, Horace A., Jr.: *See*—
Binder, Ira; and Teass, Horace A., Jr., 4,338,175, Cl. 204-195.00R.

Tech, James H.; LaFountain, Mary J.; and Van Sickle, Virginia M., to La-Van Tech Development Corp. Flow regulator assembly. 4,337,791, Cl. 137-556.000.

Technicon Instruments Corporation: *See*—
Leon, Luis P.; Yeh, Chien-Kuo; and Ahmad, Syed I., 4,338,395, Cl. 435-17.000.

Tecnomare, S.p.A.: *See*—
Banzoli, Valeriano; Beccegato, Leonardo; Minardi, Paolo; Morganti, Emilio; and Selleroni, Marco P., 4,337,829, Cl. 166-366.000.

Teitin Limited: *See*—
Yamaji, Teizo, 4,338,098, Cl. 44-3.00A.

Telectronics Pty. Ltd.: *See*—
Daly, Christopher N.; Hirshorn, Michael S.; Money, David K.; and Holley, Loraine K., 4,337,776, Cl. 128-419.0PT.

Teledyne Penn-Union: *See*—
Martin, William C.; and Hoydic, Stephen V., Jr., 4,337,635, Cl. 72-410.000.

Telle, Helmut: *See*—
Brinkwerth, Wolfgang; Huffer, Wolfgang; Raue, Roderich; Schieder, Rudolf; and Telle, Helmut, 4,338,258, Cl. 260-456.00A.

Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., to Mead Johnson & Company. Phenoxyethyl-1,2,4,-triazol-3-one antidepressants. 4,338,317, Cl. 424-250.000.

Temple, William F.: *See*—
Dean, Earl E.; Quade, Marshall L.; and Temple, William F., 4,337,612, Cl. 56-98.000.

Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,338,313, Cl. 424-246.000.

Teraoka, Masao: *See*—
Ikeda, Hideo; Teraoka, Masao; and Ishimaru, Junzo, 4,337,953, Cl. 277-152.000.

Terashima, Isamu; Uchida, Shigeru; and Senba, Eiiji, to Hitachi, Ltd. Method for operating electrophotographic copying apparatus. 4,338,019, Cl. 355-14.00D.

Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, to Sumitomo Chemical Company, Limited. Modified lithium aluminum hydrides. 4,338,255, Cl. 260-448.0AD.

Terradex Corporation: *See*—
Alter, H. Ward, 4,338,523, Cl. 250-472.000.

Terwilliger, Robert D. Load control circuit with timed interruption. 4,338,562, Cl. 323-323.000.

Tesack, Gerald; and Spector, George. Gas pump holder. 4,337,917, Cl. 251-90.000.

Teshima, Tunehiko: *See*—
Fukushima, Isao; Nishijima, Hideo; Satoh, Kenji; and Teshima, Tunehiko, 4,338,554, Cl. 318-328.000.

Tetsuro, Fujiwara; Yuji, Tanaka; and Tsunetomo, Takei, to Tokyo Tanabe Co., Ltd. Lung tissue extract useful for treating hyaline-membrane disease and method for producing the extract. 4,338,301, Cl. 424-95.000.

Texaco Development Corp.: *See*—
Hunter, Walter D., 4,338,203, Cl. 252-8.55D.

Texaco Inc.: *See*—
Brennan, Michael E.; and Speranza, George P., 4,338,443, Cl. 544-401.000.
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,338,099, Cl. 48-197.00R.
Duranleau, Roger G., 4,338,292, Cl. 423-656.000.
Hammond, Kenneth G.; and Chafetz, Harry, 4,338,206, Cl. 252-34.000.
Zimmerman, Robert L.; and Yeakey, Ernest L., 4,338,408, Cl. 521-115.000.

Texas Industries, Inc.: *See*—
Cook, Hilbert F., 4,338,135, Cl. 106-97.000.

Texas Instruments Deutschland GmbH: *See*—
Schurmann, Josef H., 4,338,572, Cl. 330-277.000.

Texas Instruments Incorporated: *See*—
Leach, Jerald G., 4,338,600, Cl. 340-812.000.
Nelson, William E.; and Lee, Gene D., 4,338,615, Cl. 346-160.000.

Thaxton, Darrel G. Fire extinguishing apparatus for oil wells. 4,337,831, Cl. 169-69.000.

Theiler, Werner C., Sr., to Minnesota Mining & Manufacturing Company. Crimp tool with station for right angle terminal. 4,337,542, Cl. 7-107.000.

Theis, Peter F. Telephone call inventorying and sequencing system and method. 4,338,494, Cl. 179-6.090.

Theuerkauf, James P.: *See*—
Siorek, Richard W.; and Theuerkauf, James P., 4,337,849, Cl. 188-276.000.

Thomas, Alfred: *See*—
Daubenbuchel, Werner; and Thomas, Alfred, 4,338,071, Cl. 425-140.000.

Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Lens case. 4,337,858, Cl. 206-5.100.

Thomas, Paul M.: *See*—
Abrahamson, Daniel P.; and Thomas, Paul M., 4,338,056, Cl. 414-152.000.

Thomas, Rudolf: *See*—
Stetter, Jorg; Ditgens, Klaus; Thomas, Rudolf; Eue, Ludwig; and Schmidt, Robert R., 4,338,119, Cl. 71-92.000.

Thomerson, Clarence, to Regal International, Inc. Bumper ring with relief groove. 4,338,046, Cl. 405-212.000.

Thompson, John S.: *See*—
Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,338,345, Cl. 426-532.000.

Thompson, Joseph, to Sterling Drug Inc. Apparatus for dispensing articles. 4,337,876, Cl. 221-36.000.

Thomson-CSF: *See*—
Drabowitch, Serge, 4,338,607, Cl. 343-754.000.
Hartemann, Pierre, 4,338,575, Cl. 331-65.000.
Oprandis, Pierre; and Romeas, Rene, 4,338,629, Cl. 358-128.500.
Rouge, Jean, 4,338,384, Cl. 429-119.000.

Thornley, Glenn D.: *See*—
Strolle, Clifford H.; and Thornley, Glenn D., 4,338,379, Cl. 428-520.000.

TIE/Communications, Inc.: *See*—
Bloch, Alan; Coviello, Frank A.; Guzik, Ira; and Puebla, Candido, 4,338,495, Cl. 179-99.00M.

Tielrooy, Robert W.: *See*—
vander Griendt, Pieter S.; Tielrooy, Robert W.; and Russell, Edward J., 4,337,719, Cl. 118-46.000.

Tiers, George V. D.: *See*—
Beck, Boyd R.; Sher, Frank T.; and Tiers, George V. D., 4,338,377, Cl. 428-428.000.

Tijssen, Henricus A. C.; and van der Malen, Bernardus G. M., to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel B.V. Counter current crystallization process. 4,338,109, Cl. 62-541.000.

Tischer, Peter: *See*—
Treitinger, Ludwig; Tischer, Peter; and Schneider-Gmelch, Brigitte, 4,338,281, Cl. 422-98.000.

Titus, Paul E., to Shell Oil Company. Prevention of sliding of a weight jacket over the corrosion coating of a pipe line. 4,338,044, Cl. 405-172.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Inoue, Hiroshi; Isoi, Masaaki; Yoda, Makoto; and Komatsu, Masato, 4,338,228, Cl. 524-120.000.

Toagoesi Chemical Industry Co., Ltd.: *See*—
Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,338,240, Cl. 524-284.000.

Toft, Mark A.: *See*—
Shore, Sheldon G.; Toft, Mark A.; and Himpsl, Francis L., 4,338,289, Cl. 423-294.000.

Togashi, Nobuyuki: *See*—
Shibayama, Hiroshi; Tanifuji, Shinya; Morooka, Yasuo; Nakai, Kozo; and Togashi, Nobuyuki, 4,338,077, Cl. 432-11.000.

Tokico Ltd.: *See*—
Ohta, Yoshimoto, 4,337,686, Cl. 91-49.000.

Shimokura, Akihiro, 4,337,850, Cl. 188-319.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ito, Susumu; and Ogino, Toshio, 4,338,503, Cl. 219-10.770.
Koinuma, Tokuju; Saito, Hisao; and Miura, Heihachi, 4,338,545, Cl. 315-39.710.
Komiya, Akitoshi; Yagi, Toshiharu; and Kondo, Akiyoshi, 4,338,544, Cl. 313-489.000.
Nagano, Katsumi, 4,338,527, Cl. 307-494.000.
Ogura, Katsumi, 4,337,901, Cl. 241-46.00B.
Takada, Shinzo, 4,337,667, Cl. 73-861.280.
Takanashi, Yukio; Nakayama, Shouji; and Higuchi, Toshiharu, 4,338,542, Cl. 313-446.000.
Ueno, Seizou, 4,338,637, Cl. 358-288.000.
Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, 4,338,223, Cl. 252-519.000.
Tokyo Tanabe Co., Ltd.: *See*—
Tetsuro, Fujiwara; Yuji, Tanaka; and Tsunetomo, Takei, 4,338,301, Cl. 424-95.000.
Tolokan, Robert P.: *See*—
Erickson, Arnold R.; Panzera, Carlino; and Tolokan, Robert P., 4,338,380, Cl. 428-594.000.
Tomaru, Hisao, to Kitazawa Valve Co., Ltd. Valve driving apparatus. 4,337,691, Cl. 92-138.000.
Tomkiewicz, Yaffa: *See*—
Engler, Edward M.; Kuptsis, John D.; Schad, Robert G.; and Tomkiewicz, Yaffa, 4,338,392, Cl. 430-270.000.
Tomlinson, Charles W.: *See*—
Suling, Robert C.; Tomlinson, Charles W.; and Fields, Winfred G., 4,337,866, Cl. 209-656.000.
Toray Industries, Inc.: *See*—
Hatada, Kenji; and Kobayashi, Hiroaki, 4,337,768, Cl. 128-214.00D.
Saito, Isoo; and Fujioka, Kotaro, 4,338,277, Cl. 264-235.600.
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Naito, Nagayoshi; Tanaka, Chiaki; and Hiratsuka, Motoki, 4,337,946, Cl. 273-225.000.
Saito, Tasuku; Noma, Tutomu; Matsunaga, Tsutomu; Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,337,947, Cl. 273-235.00R.
Tosaka, Yoichi: *See*—
Yoshida, Syozo; and Tosaka, Yoichi, 4,338,014, Cl. 354-234.000.
'Totes', Incorporated: *See*—
Uffindell, Paul J., 4,338,270, Cl. 264-46.400.
Toy, Samson K., to Boschert, Incorporated. Master-slave high current D.C. power supply. 4,338,658, Cl. 363-72.000.
Toyo Kogyo Co., Ltd.: *See*—
Tanno, Takashi; and Koike, Shigemitsu, 4,337,580, Cl. 33-179.50R.
Toyo Rubber Chemical Industrial Corp.: *See*—
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Koide, Tsuyoshi; and Suzuki, Yasuo, 4,337,599, Cl. 51-289.00R.
Toyoda, Tsunehiko; Matsumoto, Tokio; and Arakawa, Toshiaki, to Dai Nippon Toryo Co., Ltd. Jet printing ink composition. 4,338,133, Cl. 106-22.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Nomura, Yoshihisa, 4,337,792, Cl. 137-558.000.
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,337,572, Cl. 29-792.000.
Yoshida, Akio; and Inokuchi, Nobuyuki, 4,337,967, Cl. 280-777.000.
Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, 4,337,651, Cl. 73-129.000.
Trachtenburg, Martin: *See*—
Sand, Robert H.; and Trachtenburg, Martin, 4,338,156, Cl. 156-574.000.
Tredennick, Harry L.; and Gunter, Thomas G., to Motorola, Inc. Conditional branch unit for microprogrammed data processor. 4,338,661, Cl. 364-200.000.
Treitinger, Ludwig; Tischer, Peter; and Schneider-Gmelch, Brigitte, to Siemens Aktiengesellschaft. Thin film semiconductor gas sensor having an integrated heating element. 4,338,281, Cl. 422-98.000.
Treyssac, Georges, to Societe Anonyme d'Etudes de Recherches et de Productions d'Agents Chimiques ERPAC. Liquid treatment apparatus. 4,338,195, Cl. 210-519.000.
Trinkner, Eileen. Combined picnic bag and tablecloth. 4,337,812, Cl. 150-11.000.
Trop, Moshe; and Livne, Avinoam, to Ben-Gurion University of the Negev Research and Development Authority. Powdered compositions for mousse products. 4,338,347, Cl. 426-565.000.
Trotta, Robert A., to Gillette Company, The. Razor blade assembly. 4,337,575, Cl. 30-47.000.
Tseng, Shin-Shyong; and Rauhut, Michael M., to American Cyanamid Company. Aqueous chemiluminescent systems. 4,338,213, Cl. 252-188.3CL.
Tsuboi, Takashi: *See*—
Okamatsu, Shigetoshi; Tsuboi, Takashi; Ibamoto, Masahiko; and Narita, Hiroshi, 4,338,558, Cl. 318-802.000.
Tsuchiya, Syuji: *See*—
Murata, Atsuo; Tsuchiya, Syuji; and Suzuki, Hideo, 4,338,170, Cl. 204-158.00R.
Tsuchiya, Tokio: *See*—
Kumasaka, Sadao; Tada, Satomi; Horikoshi, Shigeo; Tsuchiya, Tokio; and Numabe, Masashi, 4,338,271, Cl. 264-54.000.
Tsumuki, Chiaki: *See*—
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,337,572, Cl. 29-792.000.
Tsunetomo, Takei: *See*—
Tetsuro, Fujiwara; Yuji, Tanaka; and Tsunetomo, Takei, 4,338,301, Cl. 424-95.000.
Tuchiya, Yoshimasa: *See*—
Tamamushi, Masahiro; and Tuchiya, Yoshimasa, 4,337,975, Cl. 296-215.000.
Tucker, Raymond L., to Mauri Brothers & Thomson (Aust.) Pty. Limited. Crown closure. 4,337,871, Cl. 215-328.000.
Tudek, Arthur L. Concrete building blocks with looped securing rods for mortarless wall construction. 4,337,605, Cl. 52-293.000.
Turc, Gerard: *See*—
Nicolas, Gerard; Ponthenier, Gerard; and Turc, Gerard, 4,337,573, Cl. 29-831.000.
Turcotte, Richard L., to Radiation Monitoring Devices, Inc. Method to synthesize and produce thin films by spray pyrolysis. 4,338,362, Cl. 427-314.000.
Turner, Mervyn E. D.; and Quayle, Joshua C., to Imperial Chemical Industries Limited. Corrosion monitoring process and apparatus for use therein. 4,338,097, Cl. 23-230.00C.
Tuthill, Michael G., to Analog Devices, Incorporated. High resolution digital-to-analog converter. 4,338,591, Cl. 340-347.0DA.
Tuttle, Willard N., to John Zink Company. Process and apparatus for recovering hydrocarbons from inert gas-hydrocarbon vapor mixtures. 4,338,101, Cl. 55-48.000.
Tyler Refrigeration Corporation: *See*—
Ibrahim, Fayez F., 4,337,626, Cl. 62-82.000.
Tyrolit Schleifmittelwerke Swarovski K.G.: *See*—
Pichler, Herwig; Helletsberger, Harald; Geissler, Ernst; Ofer, Heinrich; and Fugenschuh, Bernhard, 4,338,357, Cl. 427-195.000.
Tzakis, George J.: *See*—
d'Hautecourt, Alain H.; and Tzakis, George J., 4,338,624, Cl. 358-22.000.
Engel, Christopher M.; and Tzakis, George J., 4,338,630, Cl. 358-172.000.
Ube Industries, Inc.: *See*—
Umemura, Sumio; Kitoh, Ryozo; and Uda, Taizo, 4,338,471, Cl. 568-802.000.
Ube Industries, Ltd.: *See*—
Itatani, Hiroshi; Shiotani, Akinori; and Yokota, Akiyoshi, 4,338,456, Cl. 560-96.000.
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Terashima, Isamu; Uchida, Shigeru; and Senba, Eiiji, 4,338,019, Cl. 355-14.00D.
Uchimura, Shunichiro: *See*—
Sato, Hidetaka; Uchimura, Shunichiro; Suzuki, Hiroshi; and Makino, Daisuke, 4,338,426, Cl. 528-26.000.
Uda, Taizo: *See*—
Umemura, Sumio; Kitoh, Ryozo; and Uda, Taizo, 4,338,471, Cl. 568-802.000.
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Tailleur, Andre; and O'Connor, Brendan F., 4,338,028, Cl. 356-240.000.
Ueda, Hiroshi: *See*—
Kuramoto, Yoshio; Ueda, Hiroshi; and Itoh, Masatoshi, 4,337,996, Cl. 350-255.000.
Ueda, Ichiro: *See*—
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Ueda, Issei: *See*—
Ito, Hideo; Ueda, Issei; Morinibu, Yasuo; and Takeyasu, Michitomo, 4,338,241, Cl. 523-200.000.
Ueda, Shozo: *See*—
Suzuki, Hajime; Umemura, Yoshifumi; and Ueda, Shozo, 4,337,801, Cl. 139-57.000.
Ueno, Katsuji; and Maruyama, Takashi, to Sumitomo Chemical Company, Limited. Process for producing graft copolymers. 4,338,410, Cl. 525-132.000.
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Maruyama, Takashi; and Ueno, Katsuji, 4,338,421, Cl. 525-397.000.
Ueno, Seizou, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable scanning device. 4,338,637, Cl. 358-288.000.
Uffindell, Paul J., to 'Totes', Incorporated. Method of fabricating a composite foam hand held implement grip. 4,338,270, Cl. 264-46.400.
Ulf, Andersson P. Apparatus for translating rotary movement to rectilinear movement. 4,337,671, Cl. 74-424.80C.
Umemura, Sumio; Kitoh, Ryozo; and Uda, Taizo, to Ube Industries, Inc. Process for preparing phenol. 4,338,471, Cl. 568-802.000.
Umemura, Yoshifumi: *See*—
Suzuki, Hajime; Umemura, Yoshifumi; and Ueda, Shozo, 4,337,801, Cl. 139-57.000.
Ungeringer, Gerd: *See*—
Lichtner, Emil; Ungeringer, Gerd; and Giebel, Gerhard, 4,337,735, Cl. 123-193.00H.
Unimation, Inc.: *See*—
Perzley, William; and Yen-Chen, Yung-Ming, 4,338,672, Cl. 364-513.000.
Union Carbide Corporation: *See*—
Cain, Paul A.; and Wheeler, Thomas N., 4,338,326, Cl. 424-267.000.
D'Silva, Themistocles D. J., 4,338,450, Cl. 548-185.000.
Swallow, Brian R., 4,338,107, Cl. 62-17.000.
Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,338,454, Cl. 556-445.000.
Wheeler, Thomas N., 4,338,122, Cl. 71-122.000.
United States Manufacturing Company: *See*—
Lerman, Max, 4,337,764, Cl. 128-80.00F.
United States of America

Agriculture: *See—*
Anderson, Maynard E.; Marshall, Robert T.; and Stringer, William C., 4,337,549, Cl. 17-1.00R.
Air Force: *See—*
Fritts, David H., 4,338,382, Cl. 429-53.000.
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Betts, Robert E., 4,337,702, Cl. 102-254.000.
Monte, Anthony J., 4,337,803, Cl. 141-2.000.
Shore, Sheldon G.; Toft, Mark A.; and Himpsl, Francis L., 4,338,289, Cl. 423-294.000.
Siorek, Richard W.; and Theuerkauf, James P., 4,337,849, Cl. 188-276.000.
Strecker, Richard A., 4,338,442, Cl. 544-215.000.
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Strauch, Richard G.; and Hogg, David C., 4,338,608, Cl. 343-779.000.
Energy: *See—*
Grevstad, Paul E.; Johnson, Carl K.; and Mientek, Anthony P., 4,337,571, Cl. 29-623.200.
Kurnit, Norman A., 4,338,570, Cl. 330-4.600.
Health, Education and Welfare: *See—*
Petrassevich, Cornel H., 4,337,763, Cl. 128-20.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Dotts, Robert L.; and Holt, Jack W. Attachment system for silica tiles. 4,338,368, Cl. 428-212.000.
Sharma, Madan M. Optical crystal temperature gauge with fiber optic connections. 4,338,516, Cl. 250-226.000.
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Worschech, Kurt; Wedl, Peter; Loffelholz, Frido; Wegemund, Bernd; and Erwied, Werner, to Neynaber Chemie GmbH. Process for the stabilization of polyvinyl chloride and stabilizer compositions. 4,338,226, Cl. 524-302.000.

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Wright, Dennis L. Furnace basket. 4,337,872, Cl. 220-19.000.

Wu, Tai-Wing, to Eastman Kodak Company. Method for selective determination of conjugated and unconjugated bilirubin. 4,338,095, Cl. 23-230.00B.

Wyatt, William G., to Vapor Energy, Inc. Hot water system. 4,337,619, Cl. 60-39.550.

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Yahata, James I. Disposable anesthesia mask cover. 4,337,767, Cl. 128-206.280.

Yakel, Alfred W., to Keltronics Corporation. Testing facility for telephone conference bridge. 4,338,496, Cl. 179-175.10R.

Yamada, Akira; Tanno, Takashi; Wehle, Dieter; and Kaneko, Masao, to Rikagaku Kenkyusho. Process for producing hydrogen with viologen cation radical using metal complex of macrocyclic polydentate compound as catalyst. 4,338,291, Cl. 423-648.00R.

Yamada, Kouichi: *See*—
Yabu, Toshiomi; Wada, Tatsuo; Hashirano, Masaru; and Yamada, Kouichi, 4,338,640, Cl. 360-73.000.

Yamada, Kouzi: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,338,251, Cl. 260-405.500.

Yamada, Mitsuhiko; and Nakade, Toshiaki. Method for reproducing pictures from original pictures depending on the desired layout. 4,338,636, Cl. 358-256.000.

Yamada, Shoji: *See*—
Tanaka, Toshiki P.; Maeda, Minoru; Aoki, Satoshi; and Yamada, Shoji, 4,337,995, Cl. 350-96.200.

Yamada, Yasuaki: *See*—
Kondo, Hiroatsu; Ozawa, Toshiaki; and Yamada, Yasuaki, 4,338,035, Cl. 400-144.200.

Yamaguchi, Akihiro: *See*—
Mita, Ryuichi; Yamaguchi, Akihiro; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,338,259, Cl. 260-465.50R.

Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for internal combustion engine. 4,337,643, Cl. 74-35.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Iio, Toshimitsu, 4,337,734, Cl. 123-65.0PE.

Yamaji, Teizo, to Teitin Limited. Solid heat-generating composition. 4,338,098, Cl. 44-3.00A.

Yamakido, Kazuo, to Hitachi, Ltd. Voltage polarity switching circuit. 4,338,656, Cl. 363-63.000.

Yamamoto, Masanobu: *See*—
Furukawa, Shunsuke; Ogawa, Hiroshi; Okada, Hitoshi; and Yamamoto, Masanobu, 4,338,683, Cl. 369-50.000.

Yamamoto, Ryoichi: *See*—
Morita, Yoshinori; Kato, Akifumi; and Yamamoto, Ryoichi, 4,338,424, Cl. 526-65.000.

Yamanaka, Minoru; Haneda, Hideo; Kato, Masatoshi; and Suzuki, Mitsuyuki, to Aisin Seiki Kabushiki Kaisha. Solenoid valve assembly. 4,337,794, Cl. 137-596.170.

Yamanaka, Seisuke, to Sony Corporation. Solid state television camera. 4,338,625, Cl. 358-29.000.

Yamazaki, Osamu: *See*—
Motooka, Setsuzo; Karigane, Yukihiro; Yamazaki, Osamu; and Ochiai, Osamu, 4,338,282, Cl. 422-105.000.

Yan, Tsoung-yuan, to Mobil Oil Corporation. Process for the in-situ leaching of uranium. 4,337,979, Cl. 299-4.000.

Yang, Lien C.: *See*—
United States of America, National Aeronautics and Space Administration; and Yang, Lien C., 4,338,568, Cl. 324-466.000.

Yankovoy, Alexander: *See*—
Ozer, Theodore; Yankovoy, Alexander; and Imbessi, James, 4,338,050, Cl. 408-1.00R.

Yano, Yasuhiro: *See*—
Eida, Tsuyoshi; Matsufuji, Yohji; Yano, Yasuhiro; Ohta, Tokuya; and Haruta, Masahiro, 4,338,611, Cl. 346-75.000.

Yardley, James T.; Rosan, Alan M.; and Menger-Hammond, Eva L., to Allied Corporation. Catalytic isomerization process using photo-induced deligandation. 4,338,173, Cl. 204-162.00R.

Yasuda, Shigeo: *See*—
Matsuda, Akira; Hayakawa, Yoshihiro; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,337,652, Cl. 73-146.500.

Yasuda, Shuhei: *See*—
Ohba, Toshihiro; Yasuda, Shuhei; and Kanatani, Yoshiharu, 4,338,598, Cl. 340-713.000.

Yasuhara, Kiyotada: *See*—
Senzaki, Takashi; Murakami, Ryoichi; Yasuhara, Kiyotada; and Takahashi, Masashi, 4,338,141, Cl. 148-6.15Z.

Yasujima, Nobuo; Itokawa, Natsuo; and Kobayashi, Seiichiro, to Taisei Kohki Co., Ltd. Chrome-tantalum alloy thin film resistor and method of producing the same. 4,338,145, Cl. 148-133.000.

Yates, Paul C.: *See*—
Hecht, James L.; and Yates, Paul C., 4,338,243, Cl. 524-287.000.

Yeakey, Ernest L.: *See*—
Zimmerman, Robert L.; and Yeakey, Ernest L., 4,338,408, Cl. 521-115.000.

Yeda Research & Development Company Ltd.: *See*—
Tanny, Gerald, 4,338,194, Cl. 210-490.000.

Yeh, Chien-Kuo: *See*—
Leon, Luis P.; Yeh, Chien-Kuo; and Ahmad, Syed I., 4,338,395, Cl. 435-17.000.

Yellin, Tobias O.; and Mant, Derrick M., to Imperial Chemical Industries Limited; and ICI Americas Inc. 5-Guanidino-1,2,4-oxadiazoles. 4,338,447, Cl. 548-133.000.

Yellin, Tobias O.; and Mant, Derrick M., to Imperial Chemical Industries Limited; and ICI Americas Inc. 3-Chloroalkyl-5-guanidino-1,2,4-oxadiazoles. 4,338,448, Cl. 548-133.000.

Yen-Chen, Yung-Ming: *See*—
Perzley, William; and Yen-Chen, Yung-Ming, 4,338,672, Cl. 364-513.000.

Yoda, Makoto: *See*—
Inoue, Hiroshi; Isoi, Masaaki; Yoda, Makoto; and Komatsu, Masato, 4,338,228, Cl. 524-120.000.

Yokomizo, Yuji; Minami, Kiyoshi; Ichinose, Noboru; and Tanno, Yoshikazu, to Marcon Electronics Co., Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a voltage-nonlinear resistor. 4,338,223, Cl. 252-519.000.

Yokota, Akiyoshi: *See*—
Itatani, Hiroshi; Shiotani, Akinori; and Yokota, Akiyoshi, 4,338,456, Cl. 560-96.000.

Yokota, Sekiji: *See*—
Fujii, Toshihiro; and Yokota, Sekiji, 4,338,224, Cl. 523-177.000.

Yokoyama, Akira; and Arano, Yasushi, to Nihon Medi-Physics Co., Ltd. 2-Oxopropionaldehyde bis(thiosemicarbazone) protein derivatives, and their production and use. 4,338,248, Cl. 260-112.00R.

Yokoyama, Yasushi, to Nippon Electric Co., Ltd. Microinstruction processing unit responsive to interruption priority order. 4,338,662, Cl. 364-200.000.

Yoneda, Kenji: *See*—
Sugihara, Kunihiko; Yoneda, Kenji; and Muranaka, Shigeo, 4,337,641, Cl. 73-35.000.

Yoneda, Yutaka: *See*—
Sakamoto, Koya; Yoneda, Yutaka; Fujiwara, Naoki; and Takamoto, Shigehito, 4,338,283, Cl. 422-112.000.

Yonemoto, Masashi; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Elevator releveling control apparatus. 4,337,846, Cl. 187-29.00R.

Yoneyama, Masaru, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Immobilization of starch degrading enzymes. 4,338,398, Cl. 435-95.000.

Yorde Machine Products Company, The: *See*—
Deminski, Richard M., 4,338,037, Cl. 403-24.000.

Yoshida, Akio; and Inokuchi, Nobuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering device. 4,337,967, Cl. 280-777.000.

Yoshida, Kenichi, to Nissan Motor Co., Ltd. Device for judging knocking strength. 4,337,642, Cl. 73-35.000.

Yoshida Kogyo K.K.: *See*—
Doori, Hisashi, 4,337,877, Cl. 221-171.000.
Fukuroi, Akio; and Sugimoto, Isao, 4,337,631, Cl. 68-189.000.

Yoshida, Syozo; and Tosaka, Yoichi, to Canon Kabushiki Kaisha. Electromagnetically driven shutter. 4,338,014, Cl. 354-234.000.

Yoshikuni, Yoshiaki: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Yagi, Masahiro; and Ojima, Nobutoshi, 4,338,433, Cl. 536-46.000.

Yoshino, Yasuhisa; Kuno, Akira; Shimizu, Hidetoshi; and Minegishi, Harumasa, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for measuring and indicating braking vehicle speeds. 4,337,651, Cl. 73-129.000.

Yoshinori, Miyawaki: *See*—
Akira, Abe; Kimura, Shoji; and Yoshinori, Miyawaki, 4,337,778, Cl. 128-680.000.

Young, Ian A., to Mostek Corporation. Low sensitivity switched-capacitor ladder filter using monolithic MOS chip. 4,338,571, Cl. 330-84.000.

Young, James E.; Walker, Ralph S.; and Chidester, James R. Flow regulating device for arterial catheter systems. 4,337,770, Cl. 128-214.00R.

Yu, Hwa N.: *See*—
Feth, George C.; Ning, Tak H.; Tang, Denny D.; Wiedmann, Siegfried K.; and Yu, Hwa N., 4,338,622, Cl. 357-92.000.

Yuji, Tanaka: *See*—
Tetsuro, Fujiwara; Yuji, Tanaka; and Tsunetomo, Takei, 4,338,301, Cl. 424-95.000.

Yukawa, Koji; Miyazaki, Masayuki; and Murahashi, Takashi, to Konishiroku Photo Industry Co., Ltd. Device for detecting the size of the material to be copied in copying machines. 4,338,020, Cl. 355-41.000.

Zabransky, Robert F.: *See*—
Vickers, Anthony G.; and Zabransky, Robert F., 4,338,476, Cl. 585-440.000.

Zaengl, Walter S.; and Bernasconi, Felix, to Forschungskommission des Sev und VSE fur (FKH). High voltage insulation testing system. 4,338,561, Cl. 323-208.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,338,618, Cl. 357-43.000.

Zalipsky, Jerome J.: *See*—
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,338,441, Cl. 344-211.000.

Zannucci, Joseph S.; and Sublett, Bobby J., to Eastman Kodak Company. Polyester compositions having improved resistance to radiation deterioration. 4,338,247, Cl. 528-307.000.

Zeijlstra, Foeke, to Akzo N.V. Process for the removal of heavy metals from aqueous liquids. 4,338,201, Cl. 210-724.000.

Zeitlin, Martin A.: *See*—
Harper, Jon J.; and Zeitlin, Martin A., 4,338,464, Cl. 562-608.000.

Zelder, Felix: *See*—
Schlosser, Hermann; Zelder, Felix; Riedel, Rudolf; and Borberg, Klaus, 4,337,608, Cl. 53-471.000.

Zelli, Salvatore: *See*—
Zelli, Sante; and Zelli, Salvatore, 4,337,845, Cl. 187-17.000.

Zelli, Sante; and Zelli, Salvatore. Telescopic elevator devices in particular for dollies. 4,337,845, Cl. 187-17.000.

Zenith Radio Corporation: *See*—
d'Hautecourt, Alain H.; and Tzakis, George J., 4,338,624, Cl. 358-22.000.
Engel, Christopher M.; and Tzakis, George J., 4,338,630, Cl. 358-172.000.
Falater, Scott L., 4,338,632, Cl. 358-194.100.
Snopko, Paul A., 4,338,492, Cl. 179-2.0TV.

Zettergren, Ted. Converter for valves. 4,337,798, Cl. 137-627.500.

Zeugner, Horst: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Hell, Insa; and Wolf, Klaus-Ullrich, 4,338,314, Cl. 424-246.000.

Zimmerman, Edgar S. Mouthguard. 4,337,765, Cl. 128-136.000.

Zimmerman, Heinz A. R., to Ameron, Inc. Welding plastic tube lining. 4,338,153, Cl. 156-391.000.

Zimmerman, Robert L.; and Yeakey, Ernest L., to Texaco Inc. Polyurethanes using bis(aminoethyl)ether derivatives as catalysts. 4,338,408, Cl. 521-115.000.

Zoecon Corporation: *See*—
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,338,318, Cl. 424-251.000.

Zuhlke Engineering AG: *See*—
Buchmann, Hans, 4,337,890, Cl. 234-1.000.

Zupan, Jacob A., to Merck & Co., Inc. Novel process and intermediates useful in the preparation of sympathomimetic amines. 4,338,455, Cl. 560-29.000.

Zupanick, Joseph E., to Sun Gas Company. Orifice wear compensation. 4,337,668, Cl. 73-861.610.

Zverina, Karel: *See*—
Bartuska, Miloslav; Zverina, Karel; Szabo, Josef; Pospisil, Borivoj; and Kroupa, Petr, 4,338,509, Cl. 219-121.0PR.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JULY, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bake, Earl A.; and Lunt, William G., to Rockwell International Corporation. Sealed valve and related structure. Re. 30,989, Cl. 251-335.00A.

Crickmer, Charles D., to Otis Engineering Corporation. Well tool. Re. 30,988, Cl. 166-217.000.

E. R. Squibb & Sons, Inc.: *See*—
Haugwitz, Rudiger D.; and Maurer, Barbara V., Re. 30,990, Cl. 424-273.00B.

Federal Screw Works: *See*—
Ostrowski, Carl L., Re. 30,991, Cl. 179-1.0SM.

Haugwitz, Rudiger D.; and Maurer, Barbara V., to E. R. Squibb & Sons, Inc. Benzimidazole derivatives, compositions thereof and method of use as anthelmintics. Re. 30,990, Cl. 424-273.00B.

Lunt, William G.: *See*—
Bake, Earl A.; and Lunt, William G., Re. 30,989, Cl. 251-335.00A.

Maurer, Barbara V.: *See*—
Haugwitz, Rudiger D.; and Maurer, Barbara V., Re. 30,990, Cl. 424-273.00B.

Ostrowski, Carl L., to Federal Screw Works. Voice synthesizer. Re. 30,991, Cl. 179-1.0SM.

Otis Engineering Corporation: *See*—
Crickmer, Charles D., Re. 30,988, Cl. 166-217.000.

Rockwell International Corporation: *See*—
Bake, Earl A.; and Lunt, William G., Re. 30,989, Cl. 251-335.00A.

LIST OF DESIGN PATENTEES

Abe, Masaru: *See*—
Maeda, Muneyoshi; and Abe, Masaru, 265,307, Cl. D12-149.000.

Agri-Fab Industries, Inc.: *See*—
Woods, Robert F.; and Bergstrom, Ronald F., 265,284, Cl. D8-344.000.

Atari, Inc.: *See*—
McKinsey, Kevin P.; and Lee, Hugh M., 265,315, Cl. D14-102.000.

Atlas Textiles Co. Division of The Ohio Wiping Cloth Mfg. Co., The: *See*—
Frantz, Frank B., 265,269, Cl. D4-6.000.

Austin, John J., to Champion International Corporation. Sleeve for connecting containers. 265,294, 7-6-82, Cl. D9-434.900.

Baker Industries, Inc.: *See*—
Jaretsky, Michael G., 265,299, Cl. D10-106.000.

Baldwin, Robley H. Leg for recreational vehicle and mobile home hose support. 265,286, 7-6-82, Cl. D8-356.000.

Baughman, Gary E., to Malm Fireplaces, Inc. Free standing fireplace. 265,339, 7-6-82, Cl. D23-97.000.

Bennett, Margaret E. Meat tenderizer. 265,281, 7-6-82, Cl. D7-153.000.

Bergstrom, Ronald F.: *See*—
Woods, Robert F.; and Bergstrom, Ronald F., 265,284, Cl. D8-344.000.

Bollen, Roger J.; Erdos, William A.; and Ramsey, Roger H., to Eagle Rubber Co., Inc. Spring mounted riding toy. 265,334, 7-6-82, Cl. D21-247.000.

Bravo, Anthony L., to Zeno Table Co., Inc. Combined dresser and dual mirror unit. 265,275, 7-6-82, Cl. D6-154.000.

Bridgestone Tire Company Limited: *See*—
Kojima, Hiroshi; and Yokoyama, Hideki, 265,302. Cl. D12-145.000.
Kojima, Hiroshi; and Yashima, Toshihiko, 265,304, Cl. D12-147.000.
Kojima, Hiroshi; and Shimada, Tatsurou, 265,305, Cl. D12-147.000.
Kojima, Hiroshi; and Yokoyama, Hideki, 265,306, Cl. D12-147.000.
Maeda, Muneyoshi; and Abe, Masaru, 265,307, Cl. D12-149.000.
Yokoyama, Hideki, 265,303, Cl. D12-147.000.

Casio Computer Co., Ltd.: *See*—
Wada, Masao, 265,295, Cl. D10-38.000.

Chadwick, Donald T.: *See*—
Read, Clifford D.; and Chadwick, Donald T., 265,311, Cl. D14-54.000.

Champion International Corporation: *See*—
Austin, John J., 265,294, Cl. D9-434.000.

Clarke, William B.: *See*—
Schadrack, William C., III; and Clarke, William B., 265,343, Cl. D24-26.000.

Clauss, Robert E. Fishing lure. 265,336, 7-6-82, Cl. D22-27.000.

Conti, Rino, to Dart Industries Inc. Horticultural implement container. 265,267, 7-6-82, Cl. D3-30.100.

Conti, Rino, to Dart Industries Inc. Canister rim or the like. 265,280, 7-6-82, Cl. D7-129.000.

Corbo, Nicholas J.: *See*—
Klein, Paul W.; Corbo, Nicholas J.; and O'Donnell, Raymond T., 265,347, Cl. D25-1.000.

Craig, George W. Toy glider. 265,329, 7-6-82, Cl. D21-88.000.

Dart Industries Inc.: *See*—
Conti, Rino, 265,267, Cl. D3-30.100.
Conti, Rino, 265,280, Cl. D7-129.000.

D'Lites Restaurants, Inc.: *See*—
Zic, Milton N., 265,349, Cl. D25-34.000.

Dolinsky, Frank. Shopping bag. 265,290, 7-6-82, Cl. D9-305.000.

Doman, Donald W., to Kohler Co. Hydrotherapy spa. 265,345, 7-6-82, Cl. D24-38.000.

Dunn, Charles E., to Wood Valley Industries, Inc. Combined appliance support and retractable working surface. 265,277, 7-6-82, Cl. D7-46.000.

Eagle Rubber Co., Inc.: *See*—
Bollen, Roger J.; Erdos, William A.; and Ramsey, Roger H., 265,334, Cl. D21-247.000.

Eisen, Harry. Cord slack gauge. 265,297, 7-6-82, Cl. D10-70.000.

Englert, Michael W., Jr. Trash can hold down bracket. 265,285, 7-6-82, Cl. D8-354.000.

Erdos, William A.: *See*—
Bollen, Roger J.; Erdos, William A.; and Ramsey, Roger H., 265,334, Cl. D21-247.000.

Frantz, Frank B., to Atlas Textiles Co. Division of The Ohio Wiping Cloth Mfg. Co., The. Ice scraper with attached snow brush. 265,269, 7-6-82, Cl. D4-6.000.

Gabriel, Edwin Z. Educational electronic analog computer laboratory. 265,322, 7-6-82, Cl. D19-62.000.

General Electric Company: *See*—
Kirkpatrick, Robert G., 265,335, Cl. D22-7.000.

Glass, John L. Cabinet for a speaker or the like. 265,309, 7-6-82, Cl. D14-31.000.

Glassman, Richard D. Cervical dilator. 265,342, 7-6-82, Cl. D24-23.000.

Gould, Jerome, to Scotts Detergents, (A/Asia) Pty. Ltd. Bottle. 265,291, 7-6-82, Cl. D9-382.000.

Graser, Earl J.; and Wilson, Jerry F., to Manville Service Corporation. Article carrier blank. 265,293, 7-6-82, Cl. D9-433.000.

H. A. Jones Company Incorporated: *See*—
McLean, Douglas B., 265,288, Cl. D8-393.000.

Habenstein, John C. Tablet counting tray. 265,320, 7-6-82, Cl. D15-140.000.

Hamada, Masanori; and Saigo, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 265,312, 7-6-82, Cl. D14-70.000.

Hamada, Masanori; and Saigo, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 265,313, 7-6-82, Cl. D14-70.000.

Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Pruner. 265,282, 7-6-82, Cl. D8-5.000.

Hedgeman, Peter M. Felt pen holder. 265,324, 7-6-82, Cl. D19-85.000.

HEWI, Heinrick Wilke GmbH: *See*—
Scholl, Winfried, 265,274, Cl. D6-132.000.

International Playtex, Inc.: *See—*
Stern, Harold; and White, William, 265,265, Cl. D2-24.000.
Ishida, Masuo. Kite. 265,328, 7-6-82, Cl. D21-88.000.
Jaretsky, Michael G., to Baker Industries, Inc. Alarm repeater. 265,299, 7-6-82, Cl. D10-106.000.
Johnston, Joseph E.: *See—*
Lucas, George W., Jr.; McQuarrie, Ralph; and Johnston, Joseph E., 265,330, Cl. D21-150.000.
Lucas, George W., Jr.; McQuarrie, Ralph; and Johnston, Joseph E., 265,332, Cl. D21-178.000.
Joy, Linda M. Child seat. 265,272, 7-6-82, Cl. D6-9.000.
Kabushiki Kaisha Sendai Seimitsu Zairyo Kenkyujho: *See—*
Wanibuchi, Hiroshi; Moriya, Masayuki; and Yanagi, Yoshiro, 265,296, Cl. D10-40.000.
Kallaes, Elis; and Starell, Karl-Erik, to Orsa Kattingfabrik AB. Assembly tool for remote manipulation of locking container pins. 265,283, 7-6-82, Cl. D8-89.000.
Karrousel Racing Incorporated: *See—*
Zimmer, John H., Jr., 265,308, Cl. D12-190.000.
Kemp, Albert W. Air recirculator. 265,340, 7-6-82, Cl. D23-151.000.
Ketcham & McDougall, Inc.: *See—*
Macowski, William, 265,323, Cl. D19-73.000.
Killy, Earl J., to Manville Service Corporation. Protective cover for a bottle carrier or the like. 265,292, 7-6-82, Cl. D9-433.000.
Kirkpatrick, Robert G., to General Electric Company. Rotor. 265,335, 7-6-82, Cl. D22-7.000.
Kitai, Isao, to Sharp Corporation. Information input and output machine. 265,314, 7-6-82, Cl. D14-100.000.
Klein, Paul W.; Corbo, Nicholas J.; and O'Donnell, Raymond T., to Sun Chemical Corporation. Dust-control room. 265,347, 7-6-82, Cl. D25-1.000.
Knight, David P.; and Sisk, Don E. Lighted fishing float. 265,337, 7-6-82, Cl. D22-30.000.
Kohler Co.: *See—*
Doman, Donald W., 265,345, Cl. D24-38.000.
Kojima, Hiroshi; and Yokoyama, Hideki, to Bridgestone Tire Company Limited. Vehicle tire. 265,302, 7-6-82, Cl. D12-145.000.
Kojima, Hiroshi; and Yashima, Toshihiko, to Bridgestone Tire Company Limited. Vehicle tire. 265,304, 7-6-82, Cl. D12-147.000.
Kojima, Hiroshi; and Shimada, Tatsurou, to Bridgestone Tire Company Limited. Vehicle tire. 265,305, 7-6-82, Cl. D12-147.000.
Kojima, Hiroshi; and Yokoyama, Hideki, to Bridgestone Tire Company Limited. Vehicle tire. 265,306, 7-6-82, Cl. D12-147.000.
Kovens, Michael L., to Universal Security Instruments, Inc. Telephone. 265,310, 7-6-82, Cl. D14-53.000.
Kozlowski, Edward C., to Sterling Drug Inc. Bellowed dispensing bottle. 265,289, 7-6-82, Cl. D9-301.000.
Ledan Reproductions, Inc.: *See—*
Leo, Daniel W., Jr., 265,273, Cl. D6-114.000.
Lee, Dae K. Kick punching target. 265,333, 7-6-82, Cl. D21-199.000.
Lee, Hugh M.: *See—*
McKinsey, Kevin P.; and Lee, Hugh M., 265,315, Cl. D14-102.000.
Leo, Daniel W., Jr., to Ledan Reproductions, Inc. Guarded display holder. 265,273, 7-6-82, Cl. D6-114.000.
Lucas, George W., Jr.; McQuarrie, Ralph; and Johnston, Joseph E., to Lucasfilm Ltd. Toy figure. 265,330, 7-6-82, Cl. D21-150.000.
Lucas, George W., Jr.; and McQuarrie, Ralph, to Lucasfilm Ltd. Toy figure. 265,331, 7-6-82, Cl. D21-150.000.
Lucas, George W., Jr.; McQuarrie, Ralph; and Johnston, Joseph E., to Lucasfilm Ltd. Toy figure. 265,332, 7-6-82, Cl. D21-178.000.
Lucasfilm Ltd.: *See—*
Lucas, George W., Jr.; McQuarrie, Ralph; and Johnston, Joseph E., 265,330, Cl. D21-150.000.
Lucas, George W., Jr.; and McQuarrie, Ralph, 265,331, Cl. D21-150.000.
Lucas, George W., Jr.; McQuarrie, Ralph; and Johnston, Joseph E., 265,332, Cl. D21-178.000.
Macowski, William, to Ketcham & McDougall, Inc. Pencil sharpener. 265,323, 7-6-82, Cl. D19-73.000.
Maeda, Muneyoshi; and Abe, Masaru, to Bridgestone Tire Company Limited. Vehicle tire. 265,307, 7-6-82, Cl. D12-149.000.
Maier, Gary H. Instrument kit for tree problem diagnosis. 265,346, 7-6-82, Cl. D24-99.000.
Malin, Robert. Frame for picture puzzle and like article. 265,276, 7-6-82, Cl. D6-242.000.
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328 4,337,871

CLASS 219

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69 M 4,338,504
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121 EJ 4,338,508
121 LJ 4,338,506
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121 PR 4,338,509
288 4,338,510
497 4,338,511

CLASS 220

19 4,337,872
204 4,337,873
306 4,337,874
368 4,337,875

CLASS 221

36 4,337,876
171 4,337,877

CLASS 222

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102 4,337,879
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CLASS 223

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CLASS 224

42.03 R 4,337,882
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CLASS 226

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CLASS 228

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CLASS 229

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62 4,337,889

CLASS 234

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CLASS 235

92 T 4,338,512
449 4,338,513

CLASS 236

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CLASS 237

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558 4,337,916

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237 G 4,338,518
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472 4,338,523

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304 4,337,919
335 A Re.30,989
357 4,337,920

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762 4,338,263

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261 4,338,278

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388 4,338,652

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281 4,338,655

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	4,337,858		4,337,993		4,338,287		4,337,708
	4,337,882		4,337,994		4,338,608		4,337,769
04 :	4,337,541		4,337,998		4,338,642		4,337,771
	4,337,548		4,338,016		4,338,650		4,337,774
	4,337,615		4,338,024		4,338,677		4,337,787
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	4,337,709		4,338,516		4,338,344		4,338,221
	4,337,716		4,338,517		4,338,391		4,338,245
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PLANT PATENTS

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[Notice of Dec. 16, 1969, 869 O.G. 6877]

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24 : T102,001

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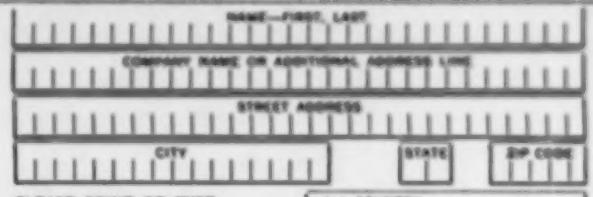

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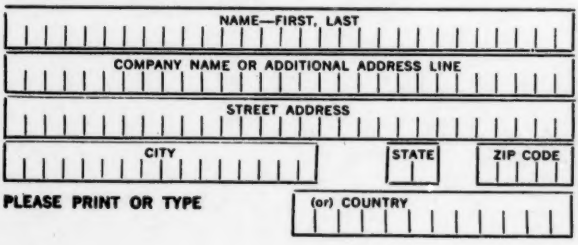

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